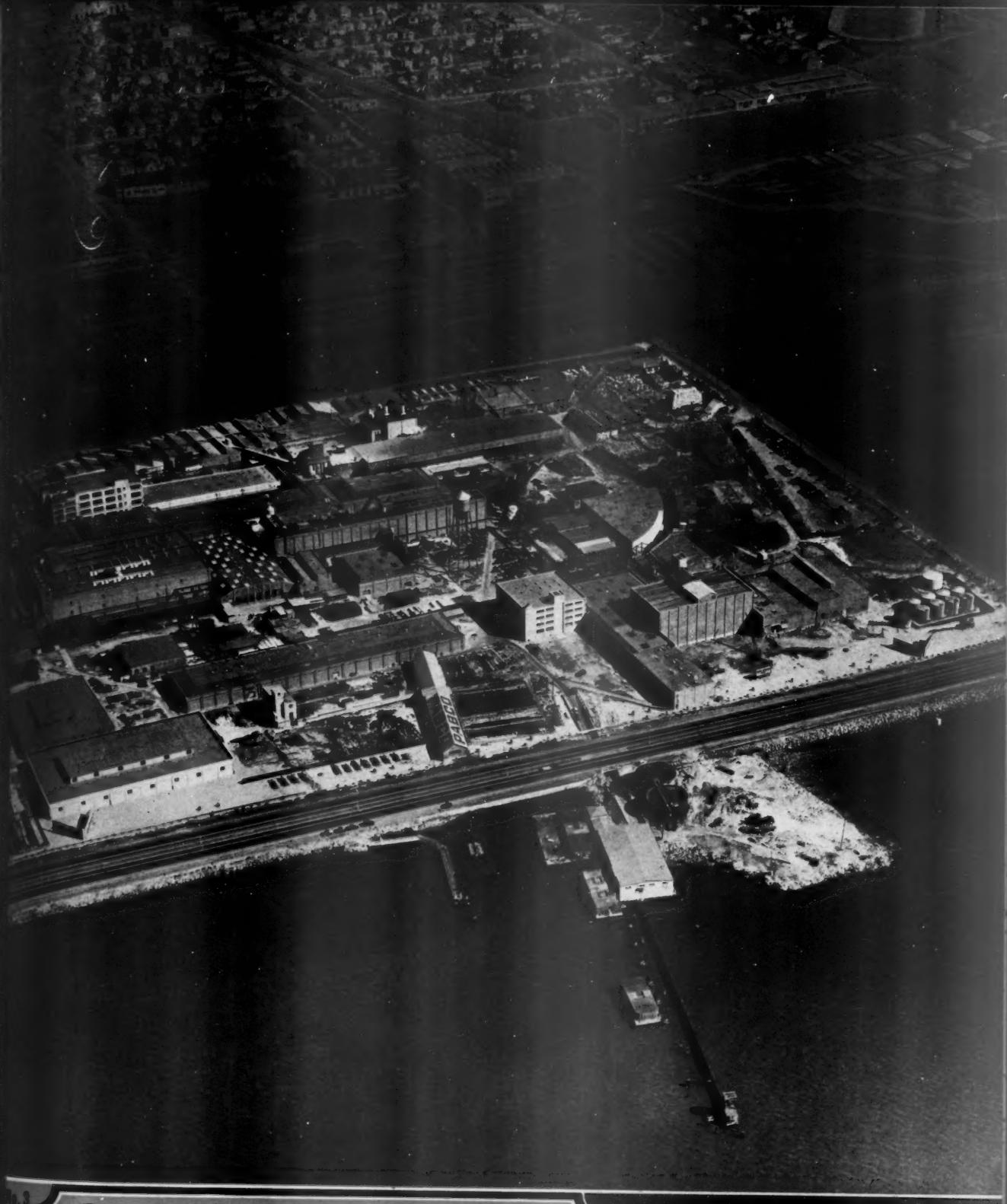


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Representatives:*

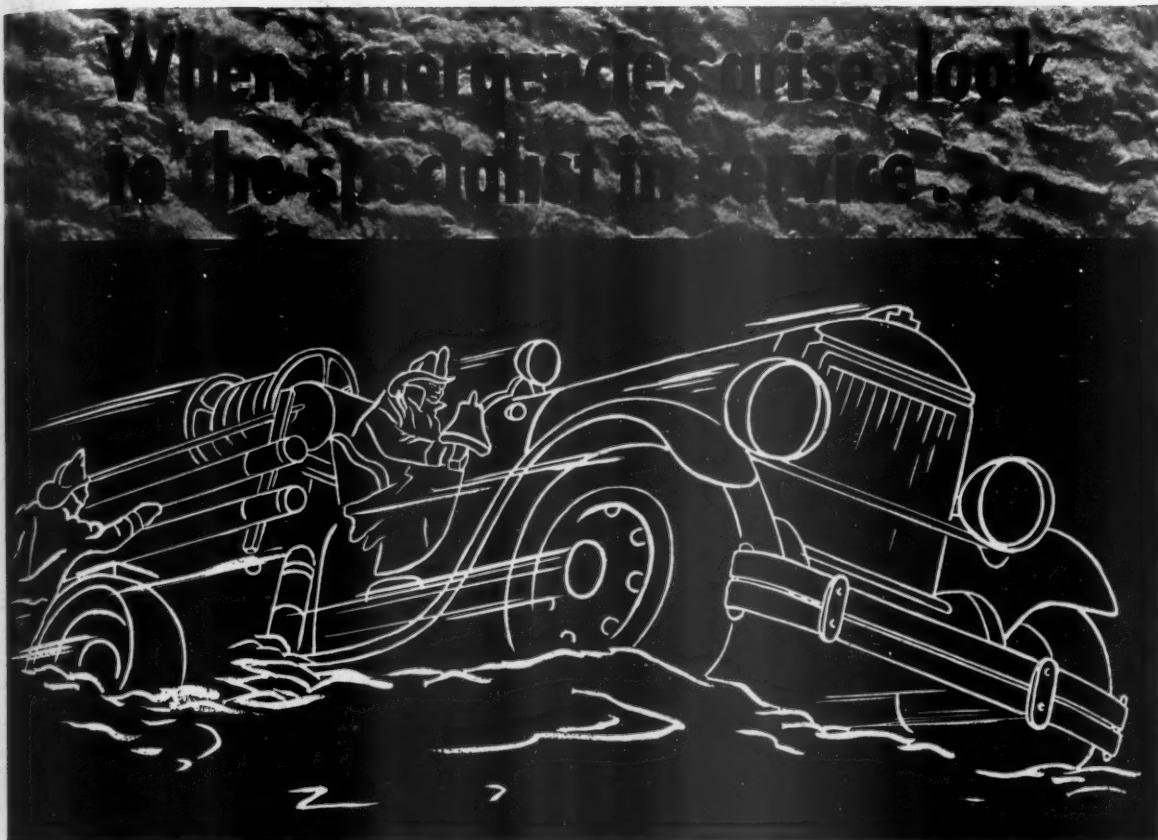
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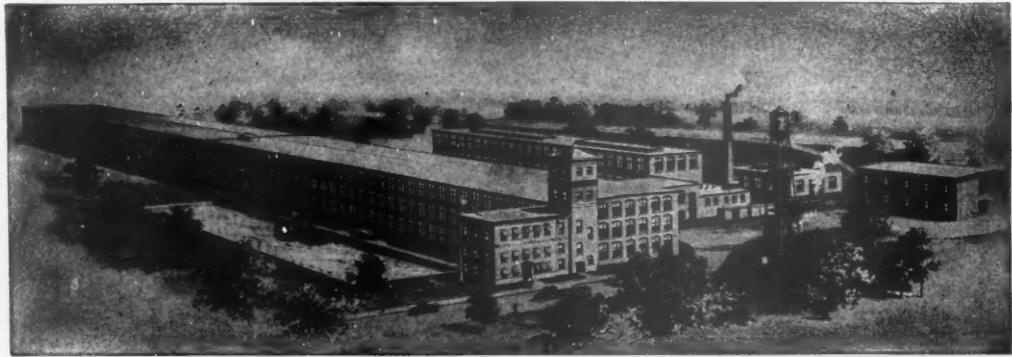
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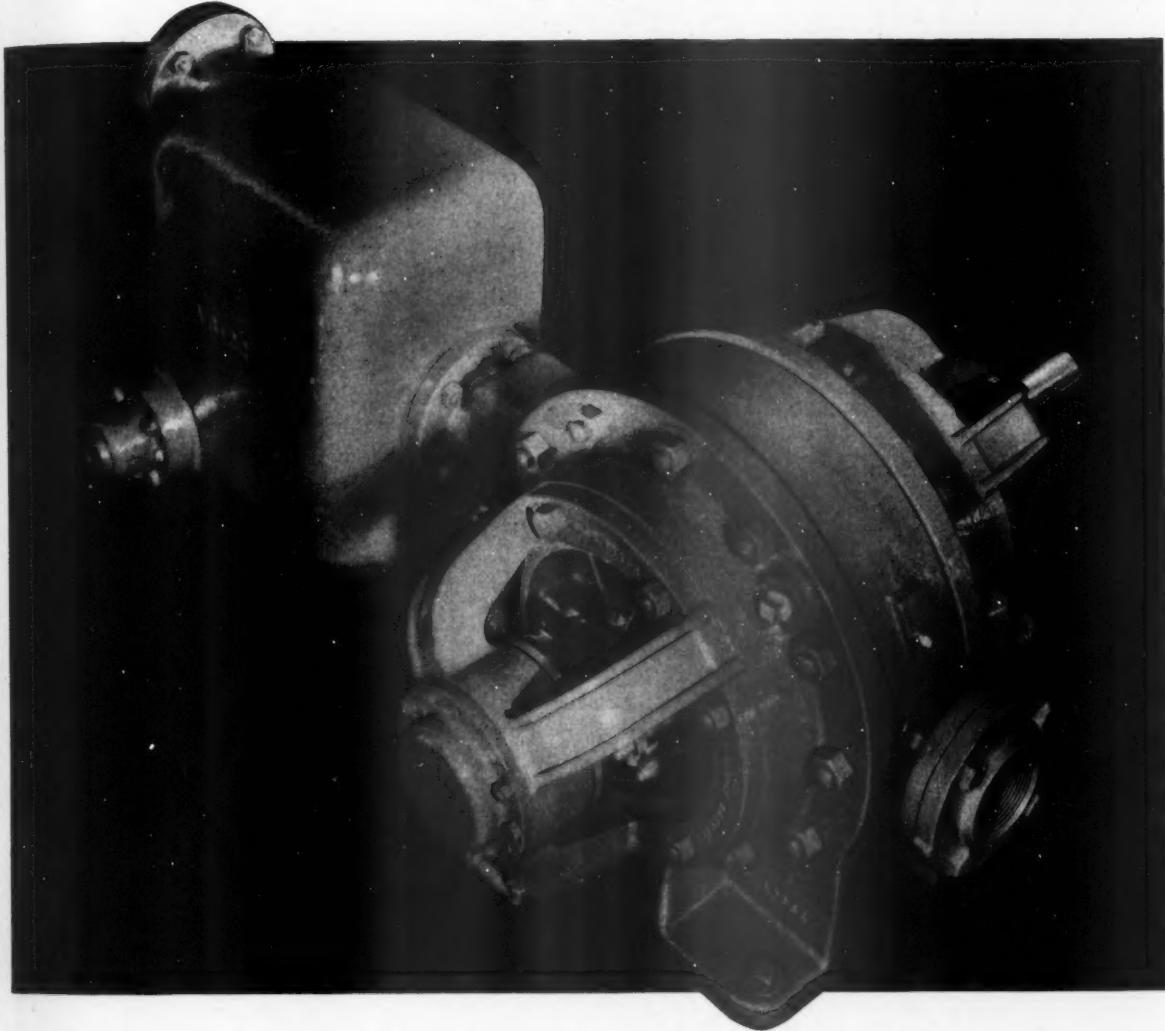
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Coal Comes Clean In Paper Packages

**Paper Wrapped Coal
Introduced in Portland—
Eliminates Dust—Clean
To Handle**

● A new use of paper on the Pacific Coast is being made by the Associated Fuel Dealers of Portland in packaging bricked coal for domestic consumption. This organization, composed of eight fuel retailers, are using the fuel-packaging process developed by C. M. Eberling of Cleveland, Ohio, and has the exclusive franchise in Oregon and southern Washington. It is headed by Chris Koenig and managed by Don Richens.

The bricks are made from high grade slack coal, only hard coals being used successfully. In the Eberling machine the coal is automatically mixed with water and a corn binder, and is then pressed and stamped into 3½-in. cubes. They are wrapped six to a package in heavy paper, the machine doing the wrapping and folding of the paper. Packages are sealed by hand with a printed gummed tape distinguishing the brand. The final step is placing them in a kiln for drying before delivery.

The paper packaging of coal bricks offers numerous advantages to the user. Fuel can be purchased in small quantities when desired, and the dealers will deliver in ¼-ton lots or more. Coal in this form is clean and makes it possible to keep the basement or fuel room neat and free from cold dust. The paper package makes it easy to handle; the housewife need do no shoveling. Fuel storage is simplified since the packages can be stacked away neatly in a minimum of space. There is no waste to the fuel, even the paper wrapping being burned, an entire package being placed in the furnace at one time.

Three brands are being packed in Portland: Kemmerer - Rainbow, Utah-Aberdeen and Kemmerer No. 5. The brand is printed on the gummed paper tape used to seal the package, a different color of printing being used to distinguish each one.

Paper packaged coal was intro-



"COL-PACS," coal pressed into cubes and wrapped in paper being placed in kiln for drying ► ► ► "COL-PACS" were placed on the market in Portland, Oregon, the first of the year.

duced here at the first of the year under the trade name "Col-Pac." Consumption has progressed satisfactorily, even though mild weather conditions have slowed down the local fuel market.

Associated Fuel dealers announced the new product with a series of newspaper advertisements directed by the Ray Carr Organization, and followed it up with a supplementary campaign with direct mail advertising, radio announcements, theaters and car cards.

The paper used in wrapping the "Col-Pacs" is Inland Kraft Brown basis fifty pounds, a sulphite wrapping paper produced by the Inland Empire Paper Company of Millwood, Washington, near Spokane.

Wood Pulp Imports Down in January

Imports of wood pulp into the United States during January, 1938, were considerably lower than in December and some 40,000 tons less than in January, 1937.

January imports of chemical pulp amounted to 131,609 short tons valued at \$5,965,308, compared with 161,576 short tons of a value of \$7,008,359 in December, 1937, and 172,137 short tons valued at \$6,666,601 in January, 1937.

Imports during January, 1938, comprised 60,551 tons of unbleached sulphite valued at \$2,408,376; 19,933 tons of bleached sulphite, valued at \$1,283,703; 39,765 tons of unbleached kraft pulp valued at \$1,535,283; 10,229 tons of bleached kraft valued at \$677,858, and 1,131 tons of soda pulp valued at \$60,088. Groundwood imports were 14,543 short tons valued at \$319,001.

Powell River Selling Groundwood Pulp

Taking advantage of a lull in the newsprint market and the operation of its new kamyr machine in the production of semi-wet pulp, Powell River Company has embarked on the manufacture and sale of groundwood pulp.

So far, this feature of the company's business is in an experimental stage, and whether it will be continued and expanded is a matter of policy yet to be determined.

However, the company has facilities for the production of about 1,000 tons of groundwood on its kamyr machine in addition to the 50 per cent dry sulphite pulp which has already found a satisfactory market in Great Britain and elsewhere. In the past, of course, the company has been utilizing all its groundwood pulp in the manufacture of newsprint.

Early last year Powell River Company decided to install a kamyr machine so as to share in the unbleached sulphite market. This had been previously taken care of by British Columbia Pulp & Paper Company, which, however, decided to convert most of its production to bleached sulphite for rayon.

Oberdorfer Expects Business Improvement

St. Helens Statement For 1937 Shows Sound Condition

The annual meeting of the St. Helens Pulp & Paper Company was held March 1st and officers of the company were reelected. Max Oberdorfer was again named president, Robert H. Ellis vice president, and Irving T. Rau secretary-treasurer.

The outlook for the business this year is good, according to Mr. Oberdorfer. To Pacific Pulp & Paper Industry he said, "I am confident that we have reached the bottom of this cycle. We have noted a gradual increase recently, and I feel sure conditions will improve during the second half of the year. There is good reason for optimism and a return of confidence."

The balance sheet of the St. Helens Pulp & Paper Company as of December 31, 1937, released following the annual meeting of the company on March 1, discloses a net profit of \$353,361.92 for the year.

Current assets amounted to \$873,628.21; cash surrender value of life insurance policies \$48,082.28; capital assets, less reserve for depreciation, \$2,723,721.35; unexpired insurance premiums \$32,193.67; total assets of \$3,677,625.51.

Current liabilities were \$275,979.85; capital stock (common only, no preferred having been issued) \$1,999,340;

paid in surplus \$1,031.25; earned surplus \$1,401,274.41; total \$3,677,625.51.

The condensed profit and loss statement shows a gross profit of \$654,645.99, and after deduction for depreciation, interest and provision for federal and state taxes, a net profit of \$353,361.92.

The 1937 profit shows an increase over the 1936 total, \$286,121, of \$67,240.92. In 1935 the item of interest, discounts and premiums amounted to \$54,007. In 1936 this had dropped to \$7,993 partly due to a retirement of the company's bonds totalling \$518,000 and paying 6½ per cent interest, through a bank loan of \$375,000. In the 1937 profit and loss statement appears the item of interest as \$2,479.19, a further reduction.

Taxes are skyrocketing, the provision in the 1937 statement being \$146,233.85 compared with \$70,114 in 1936 and around \$30,000 in 1935.

Earned surplus increased in 1937 to \$1,401,274.41 from \$1,241,815 in 1936, an increase of \$159,459. In addition there is a fixed item of paid in surplus of \$1,031.25.

The total assets and liabilities of the St. Helens Pulp & Paper Company as of December 31st, 1937 totaled \$3,677,625.51.

Puget Sound Starts First Machine

Fan Dryer Handling Pulp From Present Mill Began Operating March 15th

The first of the two fan type pulp dryers began operating March 15th in the new unbleached sulphite pulp mill of the Puget Sound Pulp & Timber Company at Bellingham, drying pulp from the present 110 tons per day mill. The pulp now being dried in sheet form was formerly shredded and dried in the Fidalgio type dryers.

Construction is moving steadily ahead on the new 125 tons unit under the supervision of the engineers in charge, Cavin, Marshall and Barr.

On February 21st the new wood cleaning and chipping building began operations and is now running one shift cutting chips for the old mill.

The sulphur conveying and storage facilities have been in use since January 21st. The new acid plant was expected to start around March 15th to make acid for the present operating mill. Two

of the new digesters have been completed and tested and lining work by the Stebbins Engineering Corporation has begun. The acid accumulator is under construction.

The screen building is complete. Screens, washers and deckers are installed and piping is rapidly being placed to connect the various units.

The second fan dryer is scheduled to arrive March 19th and will probably be ready for production the latter part of April.

Two 650 pounds pressure boilers and other equipment in the new steam plant is almost all in place and the first boiler was placed on the line March 10th.

The new unit will be ready for production at the time the second drying machine is completed the latter part of April.

Nootka May Build Pulp Mill This Year

A. E. McMaster Returns From England With News of Plans For Vancouver Island Rayon Pulp Mill

Building of a 200 ton sulphite mill on the west coast of Vancouver Island will probably be ordered before the end of the year, and it will be financed by British interests, according to A. E. McMaster, former president of Powell River Company and now managing director of Nootka Wood Products, Ltd., who has just returned from a trip to England.

While in England Mr. McMaster conferred with representatives of powerful British financial interests who have already invested heavily in British Columbia timber and sawmill enterprises. The general attitude towards the building of a pulp mill on the west coast was found to be extremely favorable, the only obstacle being the present uncertainty of world markets. As soon as conditions are more settled Mr. McMaster feels certain that the necessary funds will be made available for launching the pulp mill project, probably at Port Alberni.

While in England Mr. McMaster fully outlined his views of the pulp situation in British Columbia and the importance of expansion in that field rather than in lumber. Mr. McMaster is extremely optimistic regarding the prospects of an efficiently operated modern plant capable of producing viscose pulp suitable for rayon and its allied manufactures. Tidewater location on the Pacific coast is regarded as an important advantage.

Although preliminary plans call for

the building of a 200-ton mill, provision will be made for increasing the capacity of the plant by addition of other producing units.

"There is a very large potential market for viscose pulp," says Mr. McMaster, who has retained his close interest in the pulp and paper industry since severing his connections with Powell River Company and during his association with the lumber business at Nootka. "Unfortunately there was over-expansion during the brief pulp boom period last spring and summer. The market is feeling its way at present and going cautiously, but I believe that conditions will have become satisfactorily adjusted between now and the end of the year, and that by then we will be in a position to announce details of the proposed west coast mill."

Meanwhile Mr. McMaster has put the Nootka Wood Products, Ltd., on an operating basis, and several cargoes of lumber have been shipped from the newly created seaport at Port Tasis. Nootka Wood Products, Ltd., was originally organized by the late George Whalen, formerly with Whalen Pulp & Paper Company, but he died suddenly before completion of the mill. It is Mr. McMaster's idea that the British timber holdings on Vancouver Island and their sawmill could be effectively tied in with a profitable pulp operation.

Rayonier Shows Quarterly Profit

The consolidated net earnings of Rayonier Incorporated, and its subsidiaries amounted to \$731,691 before surtax on undistributed profits for the three months beginning with the organization of the company and ending January 31st. After dividend requirements on the \$2 cumulative preferred were deducted the balance was equivalent to 43 cents a share on the common stock outstanding.

For the three predecessor companies, Rainier Pulp & Paper Company, Grays Harbor Pulp & Paper Company and the Olympic Forest Products Company, earnings were \$990,604 for the preceding quarter.

Profit from operations for the period totaled \$928,611 after provision for depreciation of \$270,292. Other expenses amounted to \$68,634 and Federal income tax provision totaled \$128,286.

During the three-month period the company reports production of 53,600 tons of dissolving pulp and sales of 52,028 tons, production of 6,087 tons of ordinary pulp and sales of 3,101 tons, and production of 2,482 tons of paper and sales of 2,326 tons.

Directors have declared the regular quarterly dividend of 50 cents a share on the \$2 cumulative preferred stock, payable April 1 to stockholders of record March 15.

While the company had entered into firm sales contracts for 1938 production equal to estimated full capacity of its mills, except the Florida plant, the management has decided to permit customers to postpone a portion of the deliveries under these contracts because of the decline in production of rayon, staple fiber and cellophane, Edward M. Mills, president, states in his report to stockholders. He added that directors have decided to defer consideration of a dividend on common stock at this time because no import permits have yet been issued by the Japanese government covering imports under contracts for 1938 delivery. Permits have been issued, he states, covering 11,600 tons shipped in January and February representing carryover due under 1937 contracts, however, and advices indicate that permits covering 1938 tonnage may be issued about April 1.

To Make Combination Wood and Fiber Boxes

A unique fruit and vegetable shipping case made from both wood and paper is to be the product of the new Combination Box Company, which is erecting a \$100,000 plant at Haywards, California. The case will be a combination of kraft or jute liners on chipboard, reinforced by redwood or pine slats.

General manager of the company is Richard M. Oddie of San Francisco. Experiments have been conducted for some months at Alameda.

Working with the company in the promotion of this new box is the Wooden Box Institute, a trade-promotion organization of western shoox producers.

Address is 703 B Street, Haywards.

Machinery is being built specially for this plant. Mr. Oddie expects to be in production in April.

Oregon Pulp and Paper Experienced Good Year

Production Record Set For First Nine Months

The Oregon Pulp & Paper Company of Salem, Oregon, experienced a good year in 1937, according to the statement to stockholders by F. W. Leadbetter, president.

President Leadbetter stated that the mill set a record in production during the first nine months of the year, but was forced by cancellation of orders to run on part time in the last quarter of the year. This curtailed schedule is still in effect.

During 1937 the Oregon Pulp & Paper Company made a net profit of \$150,000 as compared with \$142,000 in 1936. Sales approximated \$3,000,000, up \$90,

000 above 1936. Paper sold in 1937 was reported to have been 28,155 tons, or 3,389 tons less than in 1936.

Oregon Pulp & Paper Company retired \$90,000 in bonds during the year and paid \$58,000 in interest. Mr. Leadbetter reported that over 72 per cent of the preferred stock has been exchanged for income bonds on which \$30,600 in interest had been paid. At the end of the year the company had \$225,000 in cash and \$537,000 in inventory.

A. M. Cronin, Jr., was elected secretary to succeed A. S. Fleming. All other officers and directors were re-elected at the annual stockholders' meeting.

TAPPI Enjoys Interesting Program at Tacoma

Weyerhaeuser Moving Picture and Talk by A. R. Heron Enjoyed by 111 Guests

● Those who attended the dinner meeting sponsored by the Pacific Section of TAPPI at the College of Puget Sound in Tacoma on the evening of March 10th, expressed themselves as believing it to be one of the most interesting and instructive meetings held so far.

A large group, one hundred and eleven, afterward viewed the new Weyerhaeuser Timber Company sound moving picture "Trees and Men," and heard an inspiring talk by A. R. Heron, assistant to the operating committee of the Crown Zellerbach Corporation, on the subject of human relations.

George H. McGregor, chairman of the Pacific Section of TAPPI presided and introduced the speakers and a number of prominent guests, including Dr. F. A. McMillin, head of the department of chemistry of the College of Puget Sound.

During the first two weeks of March the College of Puget Sound celebrated its fiftieth anniversary. A number of meetings and dinners were held, at which prominent men from various Pacific Coast cities spoke. The TAPPI dinner was a part of this anniversary program. Dr. McMillin thanked TAPPI for holding the dinner at the college and briefly outlined the teaching aims of the College of Puget Sound. He stated that it is a privately endowed, entirely self-sustaining institution of approximately 500 students. The college is not, said Dr. McMillin, a technical school but does teach the fundamentals of the various sciences including chemistry. This basic work thoroughly prepares students for more advanced technical study in institutions that specialize in such work.

● Chairman McGregor expressed the thanks of TAPPI to the college and introduced a number of guests including William T. Webster, general superintendent of the St. Regis Kraft Company of Tacoma, who as chairman of the meeting arranged for the dinner.

Other guests introduced included Dr. H. K. Benson, executive officer of the Department of Chemistry of the University of Washington; Andreas Christensen of the British Columbia Pulp & Paper Company, Vancouver, B. C.; J. V. B. Cox, secretary-treasurer of the Pacific Section of TAPPI; Henry J. Hartley, president of the Nichols Engineering & Research Corporation of New York; Earl G. Thompson, former secretary-treasurer of TAPPI and at present chairman of the Puget Sound division of the American Chemical Society; R. S. Wertheimer, resident manager of the Longview Fibre Company; Carl Fahlstrom, past chairman of the Pacific Section of TAPPI and technical superintendent of the Longview Fibre Company; A. D. Wood, superintendent of the Shaffer Pulp Company; R. B. Wolf, general manager, Pulp Division Weyerhaeuser Timber Company; James P. V. Fagan, manager of the Puget Sound Pulp & Timber Company's mill at Anacortes; S. A. Salmonson, assistant superintendent

of the Soundview Pulp Company; N. W. Coster, technical director of the Soundview Pulp Company and vice-chairman of the Pacific Section of TAPPI in charge of programs.

Roderic Olzendam of the Weyerhaeuser Timber Company, commented briefly on the picture, "Trees and Men." It vividly portrays the forest industries of the Pacific Northwest and the men engaged in them, their mode of life and their interests. Logging selectively to protect growing trees is emphasized along with the growing recognition that "timber is a crop," the secondary title of the picture.

Mr. Heron, whose work involves human relations spoke from his broad experience in that field, inspiring his listeners with his own confidence that out of the turmoil of recent years Americans are working toward the goal of cooperative effort in industry.

Human relations is not yet a science, said Mr. Heron. We are in the stage of the American pioneers who set out to conquer nature; we are in the period of alchemy and astrology aiming to develop a science out of human relations as chemistry and astronomy developed out of alchemy and astrology.

● Although individual psychology has developed into what many consider a science, factual data is not available for analysis on mass psychology or human relations because it concerns thoughts and emotions. Data that can be recorded has not been tabulated over a sufficient period but it will eventually lead to the discovery of basic laws in human relations.

It is not entirely true to state that mass psychology has not been developed, for politics has learned enough about the rules of mass reaction to exploit them. What has been developed along this line has so far been employed largely to exploit certain groups of people for the benefit of other groups rather than to use this knowledge to bring all groups together for concerted action of benefit to all.

The greatest need, said Mr. Heron, is to recognize that there are basic causes behind individual attitudes. Groups may

move by emotion, individuals move by personal interest.

What do men want? asked Mr. Heron. He answered by saying they wanted first, a living, which means different things for different people. In all cases they desire a living sufficient for their needs, for growth, and to provide reasonable security for themselves and their families. But they desire something more, a voice in setting the stage on which they are going to act during life; a sense of equality, of opportunity. Organizations provide a certain amount of security, an opportunity for expression of the innate desire to have a voice in fixing conditions.

● Mr. Heron remarked that the phrase, "collective bargaining," meant to him a conflict, an effort of one group to obtain benefits at the expense of another group. And, he pointed out that the winning of the battle by one group at the expense of others frequently meant suicide for the winners. He cited several examples of the winners eventually losing. Instead of this conflict, this phrase of "collective bargaining," Mr. Heron told his audience, he preferred the phrase, "collective planning," as it meant to him cooperative effort for mutual benefit, whereby all would win advantages but not at the expense of other human beings.

● Some of the things men want cannot be obtained by employees, organized or not, FROM their employers. The employers themselves must obtain some things FOR their employees. A sufficient living, a secure living, for any group of workers, demand the services of management workers in obtaining capital, obtaining orders, obtaining adequate prices.

In his opinion, Mr. Heron stated, we are on the verge of entering a period of collective planning, for we are realizing the futility of inter-group conflict and are beginning to vision the potential benefits possible when all groups work together toward a common aim.

Chairman McGregor called upon R. B. Wolf, general manager of the Pulp Division of the Weyerhaeuser Timber Company, who complimented Mr. Heron upon his talk. Mr. Wolf will be the speaker at the next TAPPI dinner meeting to be held in the social hall of the new Daniel Bagley Hall on the University of Washington campus, Tuesday evening, April 5th, at 6:30 p. m.

The following attended the Tacoma dinner meeting:

● Jerry Alcorn, Pulp Division, Weyerhaeuser Timber Co., Everett; Niles M. Anderson, St. Regis Kraft Co., Tacoma; John W. Bagwill, Rayonier Incorporated, Grays Harbor Division.

THE NEXT TAPPI DINNER —

Will be held in SEATTLE, Tuesday evening, APRIL 5th, at 6:30 p. m. in the Social Hall of the new chemistry building, Daniel Bagley Hall, on the University of Washington campus.

Robert B. Wolf, General Manager of the Pulp Division, Weyerhaeuser Timber Company, will give a talk on "Impressions From My Recent Trip to Europe."

The new Daniel Bagley Hall, housing the Department of Chemistry and Chemical Engineering, will be open for inspection.

RESERVATIONS should be made with Dr. W. L. Beuschlein, Department of Chemistry and Chemical Engineering, University of Washington, Seattle.

Hoquiam; Walter R. Baumann, Pennsylvania Salt Mfg. Co. of Washington, Tacoma; Iver E. Belwig, St. Regis Kraft Co., Tacoma; Dr. H. K. Benson, University of Washington, Seattle; C. H. Belvin, Chromium Corp. of America, Portland; W. E. Breitenbach, Rayonier Incorporated, Grays Harbor Division, Hoquiam; Richard Buckley, Pulp Division, Weyerhaeuser Timber Co., Everett; A. M. Cadigan, St. Regis Kraft Co., Tacoma.

John M. Carlson, Soundview Pulp Company, Everett; Dan Charles, Knox Woolen Mills Co., Seattle; R. E. Chase, R. E. Chase & Co., Tacoma; R. E. Chase, Jr., R. E. Chase & Co., Tacoma; Henry V. Chasnell, Rayonier Incorporated, Port Angeles Division, Port Angeles; Andrew Christensen, B. C. Pulp & Paper Co., Vancouver, B. C.; W. W. Clarke, Longview Fibre Co., Longview; Edwin L. Cliffe, Pennsylvania Salt Mfg. Co. of Washington, Tacoma; Sidney M. Collier, Soundview Pulp Co., Everett; N. W. Coster, Soundview Pulp Co., Everett; J. V. B. Cox, Hercules Powder Co., Portland; E. F. Drake, National Paper Products Co., Port Townsend; R. E. Drane, St. Helens Pulp & Paper Co., St. Helens; A. E. Duke, Soundview Pulp Co., Everett; George E. Durkee, Rayonier Incorporated, Shelton Division, Shelton; James P. V. Fagan, Puget Sound Pulp & Timber Co., Anacortes; Carl Fahlstrom, Longview Fibre Co., Longview; O. E. Fox, Pulp Division, Weyerhaeuser Timber Co., Everett; J. D. Fraser, Pulp Division, Weyerhaeuser Timber Co., Everett; Harold T. Fretz, Rayonier Incorporated, Port Angeles Division, Port Angeles.

N. O. Galteland, St. Regis Kraft Co., Tacoma; Irving R. Gard, Merrick Scale Mfg. Co., Seattle; B. R. Gardner, Pennsylvania Salt Mfg. Co. of Washington, Tacoma; A. S. Gerry, Pulp Division, Weyerhaeuser Timber Co., Everett; W. R. Gibson, Northwest Filter Co., Seattle; Iwas Gingrich, St. Regis Kraft Co., Tacoma; Harold G. Griep, Pulp Division, Weyerhaeuser Timber Co., Everett; W. C. Grieve, Goodyear Tire & Rubber Co. of Canada, Ltd., Vancouver, B. C.; H. M. Gustafson, General Electric Co., Seattle; A. Gustin, Rayonier Incorporated, Grays Harbor Division, Hoquiam.

Kenneth B. Hall, Improved Paper Machinery Corp., Portland; H. J. Hartley, Nichols Engineering & Research Corp., New York City; John E. Haider, Coast Mfg. & Sales Co., Portland; E. J. Hayes, St. Regis Kraft Co., Tacoma; Alexander R. Hieron, Crown Zellerbach Corp., San Francisco; L. E. Hill, Jr., Pulp Division, Weyerhaeuser Timber Co., Everett; Geo. W. Holt, Rayonier Incorporated, Grays Harbor Division, Hoquiam; O. L. Hudrik, The Flax Co., Portland; W. H. Hynes, General Electric Co., Portland; Gertrude Julien, Pennsylvania Salt Mfg. Co. of Washington, Tacoma.

Norman Kelly, Pulp Division, Weyerhaeuser Timber Co., Longview; John O. Kjome, Scientific Supplies Co., Seattle; Geo. H. Krueger, Consulting Engineer, Seattle; J. M. Lamb, St. Regis Kraft Co., Tacoma; Joe C. Lane, Northwest Lead Co., Seattle; Norman Lewthwaite, Crown Zellerbach Corp., Port Townsend; Henry W. Lorenz, Westinghouse Electric & Mfg. Co., Tacoma; A. H. Lundberg, Seattle; D. K. MacBain, Pulp Division, Weyerhaeuser Timber Co., Longview; J. H. McCarthy, Soundview Pulp Co., Everett.



WILLIAM T. WEBSTER
Arranged Tacoma
Dinner Meeting

Hawley Improved Condition in 1937

Financial Statement Shows
\$1,027,500 in Bonds Retired
In Four Years—To Pay
Accrued Bond Interest

The Hawley Pulp & Paper Company of Oregon City, Oregon, made substantial progress during 1937 in all departments of the business according to the company's statement recently released by Major Watson Eastman, president. The company is in a sounder financial condition than it has been for a number of years although the accumulated deficits of prior years have not as yet been wiped out.

Profit for 1937 was \$145,432 as compared with a loss of \$35,246 in 1936. Net sales were \$3,783,191 as compared with \$2,875,995 in 1936, an increase of 38 per cent. Corporate income stood at \$378,597 for 1937 against \$122,061 for 1936, more than a three times increase.

Paper production was up 24.5 per cent over 1936, establishing a new high record for the company, according to Major Eastman. Payroll was up, too, with \$1,020,788 against \$737,732 in 1936. The president's report stated that the slump experienced toward the end of 1937 and early in the present year caused it to "appear doubtful whether any of the items of production, sales or payroll during 1938 will equal the figures for 1937." However, the report stated that future prospects are regarded as "more encouraging now than at any time since the present management took charge in December, 1932."

Surplus gained \$173,011 in 1937. The company made a profit of \$58,421 from bond retirements. At the end of 1937 the Hawley operating deficit had been reduced to \$579,625 from \$843,636 in 1935, a reduction of \$264,011. The company's surplus has been increased by an equal amount from \$571,857 in 1935 to \$835,867 in 1937.

G. H. McGregor, Pulp Division, Weyerhaeuser Timber Co., Longview; F. A. McMillin, College of Puget Sound, Tacoma; J. C. Mannion, Rayonier Incorporated, Grays Harbor Division, Hoquiam; Robert W. Martig, Brown Instrument Co., Portland; Jack Martin, Schorn Paint Mfg. Co., Seattle; T. E. Moffit, Hooker Electrochemical Co. and I. F. Laucks, Inc., Seattle; R. C. Moffit, Thunderbird Mine, Ltd., Seattle; D. C. Morris, James Brinkley Co., Seattle; Fred Nicholson, Setson Ross Machine Co., Seattle; E. A. Norton, Pulp Division, Weyerhaeuser Timber Co., Everett.

Roderic Olzendam, Weyerhaeuser Timber Co., Tacoma; Adolf Orup, Soundview Pulp Co., Everett; Frederic M. Pape, Wilson & Geo. Meyer & Co., Seattle; Peter Parent, Shaffer Pulp Co., Tacoma; J. W. Peckham, The Bristol Co., Seattle; Paul Pittenger, Pulp Division, Weyerhaeuser Timber Co., Everett; C. A. Ramstad, Soundview Pulp Co., Everett; W. T. Roberts, Goodyear Tire & Rubber Co., Seattle; Nat S. Rogers, Van Waters & Rogers, Inc., Seattle; Oliver E. Ronkin, Soundview Pulp Co., Everett; A. J. Rosengarth, Hooker Electrochemical Co., Tacoma; Jimmy Ruck, St. Regis Kraft Co., Tacoma; H. Radford Russell, Everett Pulp & Paper Co., Everett; Vernon Saunderson, Van Waters & Rogers, Inc., Seattle; S. A. Salmonson, Soundview Pulp Co., Everett; Walter A. Salmonson, Coast Mfg. & Sales Co., Seattle; Geo. E. Schmidt, Pennsylvania Salt Mfg. Co. of Wash-

To Pay Accumulated Interest

In a letter accompanying the annual report, President Eastman stated that the company expected to pay the accumulated 4 per cent annual bond interest in full, on or about April 1st. The directors were expected to authorize the payment of this 16 per cent accumulated interest (January 1st, 1934, to December 31st, 1937) when they met March 15th. Earnings during 1937 were approximately enough to cover the accrued interest.

In four years, January 1, 1934, to January 1st, 1938, the Hawley Pulp & Paper Company has retired \$1,027,500 in bonds, reducing the outstanding bonds from \$2,127,500 to \$1,100,000.

With total assets of \$7,278,637 and a net worth at the end of 1937 of \$4,951,959, an increase of \$173,011, and current assets of \$1,177,590 against current liabilities of \$375,364 in 1937, compared with 1936 current assets of \$918,371 and current liabilities of \$249,605, the Hawley Company has made substantial progress in the past year.

Newsprint Stocks Going Down

The American Newspaper Publishers Association reported that stocks of newsprint on hand and in transit to publishers on January 31st, 1938, declined to 559,882 tons from 613,406 tons at the end of December. As of January 1st publishers had on hand a total of 543,969 tons of newsprint. During the month they received 209,626 tons and used 231,400 tons.

ington, Tacoma; Harlan Scott, Pacific Pulp & Paper Industry, Seattle; J. M. Shedd, Everett Pulp & Paper Co., Everett; James T. Sheehy, Rayonier Incorporated, Grays Harbor Division, Hoquiam.

Brian Shera, Pennsylvania Salt Mfg. Co. of Washington, Tacoma; P. S. Simcoe, National Paper Products Co., Port Townsend; Leon H. Spaulding, Federal Pipe & Tank Co., Seattle; V. T. Spry, Soundview Pulp Co., Everett; W. A. Simpson, R. E. Chase & Co., Tacoma; Stanley E. Sorenson, Pulp Division, Weyerhaeuser Timber Co., Everett; R. E. Strommer, Longview Fibre Co., Longview; John F. Susan, R. E. Chase & Co., Tacoma; J. E. Sullivan, Ingersoll Rand Co., Seattle; H. V. Tartar, University of Washington, Seattle.

Earl G. Thompson, Great Western Electrochemical Co., Seattle; R. M. True, General Dyestuff Corp., Portland; R. O. Vognild, Hooker Electrochemical Co., Tacoma; H. F. Warren, R. E. Chase & Co., Tacoma; Wm. T. Webster, St. Regis Kraft Co., Tacoma; W. Hunter Wells, Wells Air Transport, Ltd., Vancouver, B. C.; Cliff T. Welsh, Spear & Jackson Co., Tacoma; R. S. Wertheimer, Longview Fibre Co., Longview; J. M. Wilcox, St. Regis Kraft Co., Tacoma; A. D. Wood, Shaffer Pulp Co., Tacoma; R. E. B. Wood, Pulp Division, Weyerhaeuser Timber Co., Everett; Robert B. Wolf, Pulp Division, Weyerhaeuser Timber Co., Longview.

Spaulding To Improve Drying Machine

To Add 52 Dryers—
Charles K. Spaulding,
Founder, Dies

At a recent meeting the board of directors of the Spaulding Pulp & Paper Co. authorized O. M. Allison and J. B. Wilt to proceed with improvement of the drying machine at the Newberg, Oregon mill.

The company is purchasing 52 new rolls to extend the present machine, and will completely revamp the unit, including changing it from a three-deck to a five-deck machine. It will bring its capacity up to 80-85 tons per day, the present digester capacity, and the plant will then have 100 per cent sheet pulp production. The shredded pulp dryers will be taken out. It is hoped that the changes will be complete and the ma-

chine again in full production by September 15 of October 1.

At present the mill is running three days a week, and company officials expect to continue this schedule for the next several months, unless inventory accumulates too rapidly.

Charles K. Spaulding, founder of the mill and one of the directors of the concern, passed away the middle of February. He was a prominent Oregon industrialist, also having interests in lumber and logging, and in the Oregon Pulp & Paper Company, of which he was a director. At the time of his death he was serving as senator in the state legislature. Mrs. Spaulding was appointed to finish his term of office.

Zellerbach Reelected Vice-President of APPA

J. D. Zellerbach, executive vice-president of the Crown Zellerbach Corporation, Fibreboard Products, Incorporated, and of Rayonier Incorporated, was reelected a vice-president of the American Paper & Pulp Association at the annual meeting in New York, February 21-25th.

D. Clark Everest, vice-president and general manager of the Marathon Paper Mills Company of Rothschild, Wisconsin, was reelected president of the association at the sixty-first annual meeting.

Other vice-presidents elected were: W. H. Anders, Nashua River Paper Company; Hugh J. Chisholm, Oxford Paper Company; Stuart B. Copeland, Northwest Paper Company; R. J. Cullen, International Paper Company; Ralph A. Hayward, Kalamazoo Vegetable Parchment Company; H. L. Jenkins, George O. Jenkins Company; John R. Miller, West Virginia Pulp & Paper Company; W. J. Raybold, Rising Paper Company; J. L. Riegel, Riegel Paper Corporation; F. J. Sensenbrenner, Kimberly-Clark Corporation; C. Alfred Wagner, Stevens & Thompson Paper Company; Norman W. Wilson, Hammermill Paper Company.

H. O. Nichols, manager of the eastern division of the Crown Willamette Paper Company, division of Crown Zellerbach Corporation was reelected general chairman of the Sulphite Paper Manufacturers Association. All of the officers and members of the board of governors were reelected.

John H. Smith Elected

John H. Smith, vice-president and general manager of the Hawley Pulp & Paper Company, was the only new member elected to the advisory committee of

the Association of Newsprint Manufacturers, which consists of, in addition to Mr. Smith, E. L. Crooker, International Paper Company; Harold S. Smith, Main Seaboard Paper Company; and R. H. M. Robinson, Minnesota and Ontario Paper Company.

Chairman A. L. Hobson of the St. Croix Paper Company and vice-chairman J. D. Zellerbach of the Crown Zellerbach Corporation were reelected and Samuel Pruyne of Finch, Pruyne was elected a vice-chairman to succeed C. K. Blandin. R. S. Kellogg is secretary of the Association of Newsprint Manufacturers.



J. D. ZELLERBACH
Honored by APPA

Fernandina Construction Slowed Down

On February 25th Rayonier Incorporated issued the following announcement relative to construction of its dissolving pulp mill at Fernandina, Florida:

"In view of general business conditions, particularly reduced production schedules which have recently been in effect in the principal pulp consuming fields such as paper, rayon, staple fiber and cellophane manufacture, the management of Rayonier Incorporated has decided to delay construction operations at the plant now being built by its wholly owned subsidiary, Fernandina Pulp and Paper Company at Fernandina, Florida. As a consequence, this mill will not be completed until sometime this coming Fall instead of earlier in the year as previously contemplated."

St. Helens Constructing New Breakdown Plant

Of 150,000 Board Feet Per Day Capacity—
Completely New From Cut-Off Saw
to Chip Screens

Work was started March 4 on the construction of a new wood room for the St. Helens Pulp & Paper Company at St. Helens, Oregon.

This new plant will have a capacity of 150,000 ft. of logs per day, and will be completely new from cut-off saw to chip screens. It will provide greater chip capacity and will make possible filling chip requirements of the pulp mill in one shift instead of the three shifts

which have been necessary in the past.

A new steam splitter will be put in to split four-foot logs from the cut-off saw. A 110-inch Sumner Iron Works chipper with 350 h.p. motor is to be installed for chipping the four-foot lengths. Barking prior to splitting will be done in a large barking drum, 12-ft. by 45-ft. in size.

The new wood room, housed in a new building constructed on piles, is expected to be in operation in about three months.

Crown Zellerbach 9 Months Statement Shows Gain

For the nine months period ending January 31, 1938, the Crown Zellerbach Corporation and its subsidiaries showed a consolidated net profit of \$5,246,865, after depreciation, depletion, interest, minority interest, and income taxes, equal to \$1.44 a share on 2,261,199 shares of common after regular dividends on 529,655 shares of \$5 preferred. In the previous comparable period the adjusted consolidated net profit of the company and its subsidiaries was \$3,760,758, equal to 78 cents a common share on the basis of present capitalization. No provision has been made in the above figures for the federal surtax on undistributed profits as the liability cannot be determined until the end of the company's fiscal year, April 30th, 1938.

In the first nine months of the fiscal year ending January 31st Crown Zellerbach and subsidiary sales totaled \$38,799,203 as compared with \$33,376,286 in the previous nine months period, a gain of \$5,422,917.

United States and Canadian income taxes increased from \$645,813 in the nine months of the 1937 fiscal year to \$980,783 in the 1938 period, a rise of \$334,970.

January Quarter Down

Indicated net profit for the quarter ending January 31st, 1938, was \$806,064, or 6 cents a share on the common stock after regular preferred dividends, against an indicated net profit of \$1,933,090 and 8 cents a share in the preceding quarter, and an indicated adjusted net profit of \$784,210 in the January quarter of 1937, which was equal to 5 cents a share on the common on the basis of present capitalization.

The drop in sales is thus reflected in earnings of the January 1938 quarter. A year ago earnings for this quarter were adversely affected by the maritime strike. This year it is a drop in business due to numerous factors. However, a year ago some of the lost earnings were recovered when accumulated stocks were moved after the strike was settled. The situation this year is not comparable, there are stocks to move but they await buying orders, no means of transportation. The higher price of newsprint may help in the final quarter of the company's fiscal year, providing, of course that newspapers increase their consumption and use up accumulated stocks in time to be reflected in the April 30th statement.

The directors of the Crown Zellerbach Corporation have declared a common dividend of 25 cents a share, the same as in the preceding quarter, payable April 1st to stock of record March 14th. The company issued a statement saying, "this is an interim dividend and should not be construed as placing the stock on a regular dividend period basis."

Pacific Mills to Install Furnace

A new Tomlinson furnace will shortly be shipped to Ocean Falls for installation in the Pacific Mills, Ltd. plant. Preparatory work is now going on, and installation will start in April or early May. The new unit will go into operation about three months later.

Installation of Electric Steel Foundry indirect heating and circulating systems on the three digesters is now complete and they are again in production.

Coast Industry Given Two Places on TAPPI Committee

Albert Bankus Reelected to Executive Committee—G. S. Brazeau Named for 3-Year Term

The growing importance of the pulp and paper industry on the Pacific Coast and the progress made by the Pacific Section of TAPPI, was acknowledged at the annual meeting of the Technical Association of the Pulp and Paper Industry in New York late in February.

The acknowledgement came in the form of two memberships on the association's executive committee instead of one. G. S. Brazeau, manager of the Everett mill, Pulp Division Weyerhaeuser Timber Company, was chosen for a three year term. Albert Bankus, vice-president of the Crown Zellerbach Corporation in charge of mill operations was reelected for a two year term.

Mr. Bankus was first chosen a member of TAPPI's national executive committee in February 1936.

The new president of TAPPI, elected at the New York meeting, is Frederic C. Clark, mill manager Paper Mill Division, Pond's Extract Company, Seymour, Connecticut. Mr. Clark, a former member of the Boston firm of consulting chemical engineers, Skinner & Sherman, has many friends on the Pacific Coast, having engaged in consulting work in this field several years ago.

Vice-president of TAPPI is Harold R. Murdock, director of the Research Department of the Champion Paper and Fibre Company of Canton, North Carolina. Mr. Murdock is also well known to Pacific Coast members of TAPPI through his attendance at the national meeting held in Portland, Oregon in September, 1934.

Members of the executive committee elected at the February meetings are: to serve one year, Frank D. Libby, assistant manager of the Kalamazoo Vegetable Parchment Company; to serve two years, George D. Pearce, manager of the Maine Seaboard Paper Company, Bucksport, Maine; Albert Bankus, vice-president of the Crown Zellerbach Corporation, San Francisco; to serve three years, Lorne C. Anderson, manager of manufacturing of the Ontario Paper Company, Thorold, Ontario; G. S. Brazeau, manager, Everett Mill Pulp Division Weyerhaeuser Timber Company, Everett, Washington; K. W. E. Nicholson, manager of the Southern Kraft Corporation, Panama City, Florida and Georgetown, S. C.; B. M. Thomas, mill manager, Container Corporation of America, Manayunk, Pennsylvania.

New Edition of Volume IV Published

The Joint Textbook Committee of the Paper Industry of the United States and Canada has just published the third edition of Volume IV of The Manufacture of Pulp and Paper.

The subjects covered include: Pulping of rags and other fibers; Processing waste papers; Beating and refining; Fillers and loading; Sizing of paper; Paper coloring; Water and steam; Auxiliary mill equipment; Heating and ventilation.

Volume IV is published by the McGraw-Hill Book Company of New York.



G. S. BRAZEAU, Elected to TAPPI Executive Committee



**ALBERT BANKUS
Reelected to
TAPPI Executive Committee**

Hartwig Joins Crown Zellerbach Organization

Prominent Oregon Labor Leader to Handle Social Security Work

● Otto R. Hartwig, who since May 1, 1937, has been making a study of Crown Zellerbach Corporation operations in Washington, Oregon and California with reference to unemployment compensation, under leave of absence from the Oregon Unemployment Compensation Commission, has accepted a permanent position to continue this work, according to announcement of company executives.

Mr. Hartwig will advise the company as to compliance with the unemployment compensation laws and other social security legislation to which the various employing units are subject. His services have also been made available to Rayonier Incorporated, and Fibreboard Products, Incorporated. For the next few months the most important part of his work will be in Oregon and California, in view of the fact that benefit payments to unemployed workers in Washington do not begin until January, 1939. He will have his headquarters at the Portland office of the company.

The purpose and nature of his relationship to the various divisions, as well as the attitude in which he has accepted the responsibility, are explained in an exchange of letters by Mr. Hartwig and A. R. Heron at the time his connection became permanent.

In suggesting that Mr. Hartwig obtain his release from the Oregon commission and become a full time member of the staff, Mr. Heron pointed out the importance of continued study of the problem in order to fulfill "the desire of our company to conform to all the provisions of the several laws both in spirit and in letter, and so to serve the interests of our employees as well as of the company."

● Continuing, Mr. Heron wrote, in part, "We note that you approach the subject from the viewpoint of the worker in our employ as well as from that of the company, all of which is in line with our policy, believing as we do that when the employees' best interests have been served ours will have been served also."

Mr. Heron stated the company's desire to cooperate fully with all government agencies in the social security work, and assured Mr. Hartwig that he might feel free to render any assistance that the state commissions or other governmental agencies might request from time to time.

With respect to labor organization work, in which Mr. Hartwig has been engaged most of his life, he said, "We realize that you will want to feel free to continue your contacts with the various labor organizations in the state whenever opportunity offers, and when requested to do so by such organizations, without restriction by reason of your employment by our company. We assure you that no change has occurred in our viewpoint since agreeing to this condition at the

time you were granted the leave of absence to come with our company temporarily last May. With special reference to the latter it may interest you to know that our company and associates have agreements with some sixty local labor organizations in Oregon, Washington, California and other states and have had for a number of years."

Mr. Hartwig accepted the company's proposal only after consultation with officials of the Oregon commission and with a number of his friends in the labor movement. His attitude in accepting the position is indicated by his reply to Mr. Heron, in which he said in part:

● "I am impressed, and so were those to whom I have shown your letter, with the advanced viewpoint indicated by the Crown Zellerbach Corporation and its various executives, not only as to compliance with social security laws, but also with reference to the attitude of your company towards labor organizations of various kinds. It demonstrated to me, and I am sure has to those I refer to above who had a chance to read your letter, that the Crown Zellerbach Corporation fully recognizes the right of labor to bargain collectively through representatives chosen by the organization of employees who are members of a bona fide labor organization.

"It is because I am convinced that the company and its various executives, including yourself, have a genuinely friendly feeling toward the worker and his rights that I have decided to accept your proposal to join the staff of your company. After thirty-six years of uninterrupted membership in labor organiza-

tions with almost thirty years of more or less active service in the labor movement of Oregon, it would be utterly impossible for me to change my viewpoint on this subject. In fact, as the years roll on I become more firmly convinced than ever that the right of workers to organize and bargain collectively is one that must be retained and acknowledged, if human progress is to continue and we are to avoid the spread of the various ills so much heard of today the world over.

"One other reason why I have decided to accept your proposal is that to help guide the company with respect to social security problems furnishes to me an opportunity for continued service, particularly to the worker, along lines which are similar to those in which I have served all my life.

"In conclusion, permit me to state that I am happy because you and the company executives have made it possible for me to accept your offer, by agreeing to my continuing the practice of cooperation with various governmental agencies set up to administer these laws, and also by agreeing that I may be free to continue my associations with labor groups unhampered by reason of my employment with the company. Without this freedom I feel that I should be handicapped in performing my work satisfactorily, and, therefore, would be unable to serve along the lines you suggest."

● Inquiry by PACIFIC PULP & PAPER INDUSTRY among labor officials disclose that his friends in labor wish him well in his new undertaking and hope for his success.

Mr. Hartwig has had long and active service in the ranks of organized labor. Born in Manistee, Michigan, he came to Portland in 1906 and has lived here ever since. In 1916 he was elected president of the Oregon State Federation of Labor, a position in which he continued through 1924. During the war he helped organize and set up the draft system in Oregon as a member of the Draft Board.

He also has served in numerous capacities in civic and labor work, on labor and conciliation boards, as a member of the State Board of Vocational Education in Oregon, as president of the Portland Cooperative Labor Temple Association, etc. More recently he was a member of the State Industrial Accident Commission representing labor, until in January, 1936, he became Public Relations Director for the State Unemployment Commission. He remained in this work until May 1, 1937, when he first became connected with the Crown Zellerbach Corporation.

St. Regis Local To Stage Annual Party

● The stag party held late in January by the St. Regis local of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, turned out to be such a great success that the members voted unanimously to make it an annual affair.

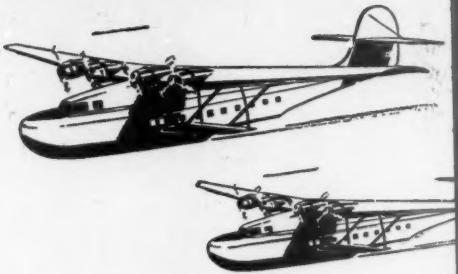
New officers were installed at the party including F. R. Soenens, president; E. J. Larsen, vice-president; Archie P. Ohiser, secretary; S. L. Fulton, financial secretary, and M. C. Bradley, treasurer.

The stag party and installation of officers marked the completion of the St. Regis local's first year of existence.



OTTO R. HARTWIG
Oregon Labor Leader

PACE SETTERS



by Bagley & Sewall

PRODUCTION OR IN CONSTRUCTION DURING 1937

KRAFT . . .

BOARD . . .

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SULPHITE
SPECIALTIES

FELTS . . .

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RODUCT
ND POLICY . . .

. . . A 210 inch Fourdrinier machine for Crossett Paper Mills, Crossett, Arkansas.

. . . A 146 inch cylinder machine for Clifton Paper Board Company, Clifton, New Jersey.

. . . A 96 inch Fourdrinier machine for Smith Paper Inc., Lee, Massachusetts.

. . . A 110 inch Fourdrinier machine for Eastman Kodak Company, Rochester, New York.

. . . A 136 inch Fourdrinier machine for Kalamazoo Vegetable Parchment Company, Parchment, Michigan.

. . . A 166 inch Fourdrinier machine for Armstrong Cork Company, Fulton, New York.

. . . A 128 inch special cylinder machine for Dominion Cellulose, Limited, Toronto, Ontario.

* We feel to a decided extent that a product is an indication of the factory and organization which produced it.

It is our engineering policy to incorporate in the design of our paper machines a proper simplicity of construction to assist operation, yet with this maximum of simplified design include a type of rigid, well-designed construction, which we feel has been characteristic of Bagley and Sewall products.

Into machines of wide or narrow widths or of different types, go the same painstaking manufacturing efforts.

E BAGLEY & SEWALL COMPANY * WATERTOWN, N. Y.

Quality

**SULPHITE
PULP**

**PUGET SOUND
PULP & TIMBER COMPANY**

BELLINGHAM, WASH.

**DOMESTIC & EXPORT
SHIPMENTS**

Puget Sound Reports Increased Profit for 1937

• Early in March the Puget Sound Pulp & Timber Company, with unbleached sulphite pulp mills at Anacortes and Bellingham, Washington, released its report for 1937, showing a consolidated net profit of \$271,143 after all charges.

After payment of preferred dividends the balance is equal to 78 cents a share on the 251,836 shares of common stock. In 1936 the company showed a profit of \$8,827 and in 1935 of \$4,346.

The Puget Sound Pulp & Timber Company will have its new unbleached sulphite pulp mill unit ready for operation the latter part of April. It is capable of producing an additional 125 tons per day.

Japanese Mixing Staple Fiber With Cotton and Wool

• In order to curtail consumption of raw cotton, the Japanese Commerce Department announced on December 27th, 1937, the enforcement on February 1st of article 2 of the Emergency Export and Import Readjustment Law, which provides for the mixing of 30 per cent staple fiber in cotton yarns, cotton goods, and cotton hosiery for domestic consumption. The law also licenses domestic sales of cotton yarns, textiles and hosiery manufactured for export or as materials for the manufacture of export articles.

Trade reports indicate that the Department of Commerce will shortly strengthen existing regulations covering the mixing of staple fiber in woolen yarns and goods for domestic consumption.

Soundview Reports Profit for 1937

• The Soundview Pulp Company and subsidiaries showed a net profit for 1937 of \$1,626,898 after all charges, including federal taxes, depreciation, depletion, amortization and adjustment of inventories. This compares with a net of \$568,253 net profit for 1936 when the company was operating two less units.

Sales of pulp during 1937, less freight, commissions and discounts, totaled \$6,336,882. Costs, including \$395,241 for depreciation, depletion and amortization of process rights, were \$4,346,074. Other charges, including \$69,664 general administration, salaries and expenses, totaled \$219,305.

Provision for Federal income tax was \$360,000 of which \$285,000 represented normal, \$66,000 excess profits and \$9,000 surtax on undistributed profits.

Current assets as of December 31st, 1937, were \$2,483,949 compared with current liabilities of \$871,203. Assets totaled \$11,796,347.

During 1937 Soundview paid dividends of \$54,963 on the 21,075 shares of \$100 par value 6 per cent preferred entitled to dividends and \$470,812 in cash and \$976,500 par value preferred on the common, or approximately \$3 per share. Also, during the year, Soundview retired about \$838,000 par value serial notes through an exchange of an equal amount of preferred stock.

Rayon and other CHEMICAL USES OF WOOD PULP

Some Reasons for Japanese Staple Growth

• The Far Eastern Survey for January 19th, 1938, published by the American Council, Institute of Pacific Relations, points out several interesting facts concerning the development of rayon and staple fiber manufacturing in Japan and the governmental regulations requiring certain percentages of staple fiber be mixed with natural fibers.

The article stated that the Japanese regulations of November, December and January requiring staple fiber mixtures with natural fibers would probably result in the saving during 1938 of 275,000 bales of imported raw cotton, still further reducing the sale of cotton to Japan.

These regulations include the November order providing for the compulsory mixing of staple fiber in woolen yarn to the extent of at least 10 per cent by weight and in woolen cloth to the extent of at least 20 per cent. Serge for Japanese garments are to contain over 30 per cent staple fiber; woolen tissues made of worsted yarn only, over 20 per cent; flannel, over 20 per cent; knitting yarns, made by twisting more than three woolen yarns, over 30 per cent. Manufacture of muslin is prohibited in principle, certain exceptions being made including goods for export. Military supplies are not restricted, but the Survey article states that the government is reported to be insisting on at least 30 per cent staple fiber in blankets purchased for army use and 25 per cent in uniforms. The Department of Education is also urging students to use uniforms containing staple fiber. At the time the Survey article was written it was expected that regulations concerning the mixing of staple fiber in cotton textiles would be issued in January or shortly thereafter. These were expected to require at least 30 per cent staple fiber in cotton piece goods, hosiery and towels for domestic consumption, exception being made for medical gauze and airplane canvas.

In order to supply the greatly increased demand expected as a result of these regulations, it was expected, the Survey article stated, that the Japanese government would permit new spindles to be installed. Staple fiber has been designated as an industry in which expansion may be permitted under the terms of the new investment control law. At present 620,000 spindles are in operation on staple fiber and 855,000 are said to be in the process of installation. It has also been suggested that some of the rayon and cotton spindles sealed under current curtailment programs, be released and devoted to staple fiber.

• Domestic consumption of staple fiber has been stimulated by the action of the Finance Ministry on May 1st, 1937, exempting textiles made wholly or partly of staple fiber from the textile excise tax.

Quoting the Far Eastern Survey directly, "The government is said to be

considering raising the compulsory proportion of staple fiber in wool mixtures to 40 per cent, either directly, or by further restricting wool imports in 1938. This, of course, will mean permitting larger imports of wood pulp, the raw material of rayon and staple fiber, for which also Japan is largely dependent on the outside world. Imports of pulp were valued at 63 million yen during the first ten months of 1937.

"However, the shift is considered desirable under present circumstances on two counts: first, that Japan can at a pinch draw more heavily on her own forest resources for the production of wood pulp; and second, that the net effect will be to save foreign exchange as raw material costs form only about 35-40 per cent of the total cost of production of staple fiber, as against 60-80 per cent for cotton yarn."

Cellulose Replacing China Tung Oil

• In a recent advertisement the Hercules Powder Company answers its own question, "What to do about Tung Oil Shortage?", by pointing out that nitrocellulose lacquer is a tried and proved replacement for tung oil varnishes. In wood finishing, especially, nitrocellulose lacquer meets the requirements of quick drying, water proofness, chemical resistance and flexibility.

It is further emphasized that nitrocellulose is a domestic (major portion of tung oil still comes from China), is always available, and is not subject to violent price fluctuations. Nitrocellulose has steadily declined in price and is now selling at the lowest price in its history. The Hercules Powder Company recommends nitrocellulose lacquers as a means of obtaining equal or better results in replacing tung oil varnishes for certain work.

Another possible method of replacing China wood oil, says the Hercules advertisement, is the use of either Tornesit or Hercules Ethyl Cellulose to speed the drying rate of oleoresin varnishes. From laboratory data available, it is indicated that small percentages of either of these materials speed the drying time and improve the finish of cooked varnishes using linseed, perilla and oiticica oils. Hercules offers a booklet on this subject.

Western Paper Converting Reelects Officers

• At the annual meeting of stockholders and directors of the Western Paper Converting Company of Salem, Oregon, on February 15th, all directors and officers were reelected except that W. P. Donnelly was chosen a director to succeed the late A. B. Galloway.

Officers of the company are: William S. Walton, president; Lloyd Riches, vice-president; T. A. Roberts, treasurer; W. E. Keyes, secretary. Directors elected are: Nils Teren, H. H. Smith, C. E. Wagner and W. P. Donnelly.

Camas Paper School Holds Fifth Graduation

Diplomas Awarded to
127 Students at Banquet
Held March 2nd

● Marking another milestone in constructive cooperation between management and employees, and another forward step in the individual lives of an energetic and ambitious group of mill men, members of the Crown Willamette Paper School gathered March 2nd at the Crown Willamette Inn in Camas, Washington, for the Fifth Annual Graduation Banquet.

More than 200 persons were present in the banquet hall to witness the awarding of diplomas to 127 successful students. Of this number, 16 graduated from the fourth year class, the second such group in the history of the school to finish the grind of four years hard work during the 16-week annual sessions.

There were 14 completing the third year course, 32 graduating from the second year and 59 who received their awards for finishing the first year classes. Of the total number, six were from the company's West Linn, Oregon mill, 40 miles distant. It is both a credit to these men and an indication of the interest provided by the school, that they made the long trip to each evening class and earned their promotion at the end of the school.

● This year's graduating class shows an increase both in original enrollment and in the number of students receiving diplomas. The enrollment last year totaled 200, while this time there were 211 in the school. Of the former number, 109 graduated in 1937, while 127 finished their courses this March. It is a healthy sign that even after five years of operation, the paper school continues to have an increasing enrollment and an increasing number of successful students.

Toastmaster of the evening was assistant mill manager A. G. Natwick and dean of the paper school.

Diplomas were presented to each graduating student individually by J. E. Hanny, mill manager, and each student in the other classes received certificates of promotion.

● Frank N. Youngman, assistant vice-president of the Crown Zellerbach Corporation in charge of the company's affairs at Portland, presented service pins to 16 mill employees who had completed another five-year cycle in company service and who were entitled to wear a pin showing the next rank of seniority.

Mr. Youngman pointed out that nearly 1,000 of the 1,750 employees at the Camas mill have pins showing five years or more service. There are 400 who have been there five years, 275 for ten years, 175 for 15 years, 75 for 20 years, 35 for 25 years, 15 for 30 years, six for 35 years and one for 40 years. The last classification will be increased

next month when a member of the sales department gets his 40-year pin.

In speaking of the usual practice of congratulating the men on their long periods of service, Mr. Youngman said in compliment to them, "The company is the one to be congratulated, not the men, on having these employees who have given so many years of faithful service."

Special awards for honor students in each class were given by Mr. Natwick and Mr. Barber, dean and principal of the school. First honors in the fourth year graduating class went to Clarence G. Shaw, Victor C. Lau and Robert Hetherington, each of whom received a trip of one week to visit the various mills of the company and affiliates, with pay and expenses paid by the Crown Willamette Paper Company. Honorable mention for his work was accorded Porter T. Dickie.

● Of the third year students, Leonard N. Smith was No. 1 man, receiving Volumes III, IV and V of the Manufacture of Pulp and Paper as a gift of the company. Carlton Duncan, next honor man was presented a subscription to PACIFIC PULP & PAPER INDUSTRY with the compliments of this journal. Honorable mention in the third year class went to Chester Beals.

The first honor students in the second year group, Keith Hill and Clifford B. Wise, also received complimentary subscriptions to PACIFIC PULP & PAPER INDUSTRY. James L. Hays received honorable mention among second year students.

Don Lucas was first honor student in the first year class and Lowell Weiler second honor man, these two also receiving subscriptions with the compliments of this journal. Three others earned honorable mention; Richard D. Day, Thurman E. Dear and Chauncey L. Storms.

● Honorary degrees, given for the first time a year ago, were this year conferred on four men for conspicuous service. To Frederic Roy Sievers was awarded a degree as Doctor of Philosophy in the Manufacture of Mechanical Pulp; to Andrew William Olson was given the degree of Doctor of Philosophy in the Manufacture of Pulp and Paper; to James Wilson Duvall was awarded a degree as Doctor of Philosophy in the Manufacture of Paper Specialties; and upon Albert Guy Natwick was conferred the degree Doctor of Philosophy in the Manufacture of Chemical Pulps.

The degree given Mr. Natwick, who is dean of the paper school, was a surprise to him, as it was not on the program and he knew nothing about it beforehand. Mr. Hanny made the presentation saying it was in recognition of Mr.

Natwick's work in both the mill organization and in conducting the very successful paper school.

William R. Barber, technical supervisor and principal of the paper school expressed the company's appreciation to all those men who contributed to the school work and mentioned especially Fred A. Olmsted, vice-principal and in charge of the First Year Class; W. A. Kaye, in charge of the Third Year Class; and E. H. Nunn, in charge of the Fourth Year Class. Mr. Olmsted and Mr. Kaye spoke briefly of the fine work done by the students in their classes.

Entertainment during the banquet was provided by G. H. Gallaway, who added much to the pleasure of the evening by playing a number of piano selections, and by Lowell Weiler with his trombones. The entire program for the banquet ran smoothly and with dispatch, a tribute to the efficient work of Millard Rawlings, registrar of the paper school, in handling all arrangements for the meeting.

Harry Glen contributed to the lighter moments of the evening with a talk full of witticisms, speaking of his early days in the mill in humorous vein. He described at some length his experience in the mill with George (Smiley) Williams, and the numerous interesting and humorous episodes. Mr. Williams, who entertained the crowd last year with a witty talk, has been with Crown Willamette for more than 40 years, most of which has been at Camas.

The speaker of the evening was G. W. Wisting, assistant general manager and manager of business development for the Northwestern Electric Company. Mr. Wisting, a man who was a foundry worker 20 years ago, is an able speaker, and he spoke with understanding of those who are advancing themselves through hard work. His subject was "The Qualifications for Leadership." He said, in part:

● "One of the most fundamental urges in human nature is to do and be something worth while. It is this urge that causes the world to progress. In other days, this meant the urge to be the greatest bandit or conqueror, and to bring back the most loot. Today, the fellow who is somebody worth while is the one who makes this business of living a little easier and more pleasant.

"It is this desire which has urged you men to study these courses in order to make your lives better and happier, to make yourselves something above the elementary through special training. Man's ability in this world is not valued and paid for by what ability you possess, but by the way in which you use it. What you are and what you become depends entirely on you.

"Not every man can make a home

run, and some are satisfied just to reach third base. But for those who continue trying, the valor of your attempt is scored even if you only reach third base, for you have built strength within yourself.

"You will be exposed to tests as to whether you have the strength to attain leadership. If you would be able to meet the big problems, you must be firm in the little emergencies. There is no short cut to leadership. You must have the fortitude to stay with the job. You who are here have shown the capacity to stand the gaff, and are to be congratulated on reaching third base, the point of departure for a home run."

Mr. Wisting urged upon his listeners a feeling of responsibilities in civic affairs, in upholding American traditions and forwarding national interests. He traced the evolution of American industry, and advised holding to the American pattern of things and to the American freedom of opportunity.

"You are in one of the most interesting and most promising industries in the world," he said, in pointing to the increasing uses for cellulose. In conclusion, he emphasized that the last great stands of suitable timber lie in the Northwest, and spoke of possible developments in various other Northwest industries.

First Year Graduates

- Among the First Year Class graduates were six men from the West Linn, Oregon mill of the Crown Willamette Paper Company, marked (WL). These men regularly made the 70 mile round trip to Camas twice a week during the sixteen week school term.

The following graduated from the First Year Class:

- B. C. Abrams, Howard J. Anderson, William E. Anderson, Adolph T. Ast,

Richard L. Baldwin, George E. Bamber, R. Jack Batzer, A. A. Bennett, Rex Brown, Glenn Chandlee.

- Arnott M. Clark, Ronald Cory, Robert Conway, Edwin C. Cooley, Richard D. Day, Thurman E. Dear, Hubert Franklin, William Fritz, Carl Gehman, John O. Glesmann (WL).

- John Gregory, Howard Hammond, Halber O. Hinze, Arnold Hirsekorn, Ingman Holm, Thomas M. Hughes, Lloyd O. Hutchison, Clayton Huycke, Ragner S. Josephson, Joyce Ulmer Kendall (WL).

- Barry H. Lindquist (WL), Kenneth Locke, Don Lucas, Philip Luch, J. S. Mears, Jack M. Miller, Willard McCoy, Fred McHone, R. Keith Owen, Walter Perrault.

- Donald F. Persons, Harold Quick, Carl Rhorer, E. J. Roake (WL), J. D. Roberts, Robert Roppel (WL), George H. Rundquist, Curtis E. Sawyer, William O. Shadel, Lester Sherrell.

- Wyland L. Stayton, Harold E. Stenehjem, Chauncey L. Storms, Ralph Strickler, Loren D. Voss, Lowell C. Weiler, H. E. White, Roy L. Wohlsein, Thurston L. Yocom (WL).

Second Year Graduates

- The following graduated from the Second Year Class of the Camas Paper School:

- E. D. Vickers, William E. Wegner, Edward H. Vogt, Reynold N. Soderlind, Alfred V. Lancaster, Henry W. Dassel, Frederick W. Covell, Luther W. Cramer.

- Henry Brown, G. Carpenter, David J. Clark, Elmer W. Clark, W. Bruce Dobbs, James L. Hays, Keith Hill, Virgil Hughes.

- Gladwin Hylton, Alex Kershinar, James B. Knight, R. F. Leach, Edward C. Lownick, Dorsey E. Lowther, Raymond F. Miller, Conrad Morasch.

- William G. Powell, Walter Rains, Walter Rich, Kenneth E. Rodd, Fred Schick, James M. Turlington, Ray Wadsworth, Clifford B. Wise.

Third Year Graduates

- Those graduating from the Third Year Class of the Camas Paper School were:

- Chester T. Beals, Thomas F. Buford, Carlton Duncan, Howard J. Ells, Willis Frye, William P. Luthy, Roy R. Miller.

- Clifford Odoms, Owen V. Owens, Robert W. Simpson, Leonard N. Smith, W. G. Webb, S. E. Wightman, Laurence Wright.

Fourth Year Graduates

- Sixteen men graduated from the Fourth Year and final class of the Camas Paper School:

- Laymon P. Bastian, Porter T. Dickie, Manley M. Greer, R. C. Hayes, R. Hetherington, Milan B. Hill, Irwin Jessen, Victor C. Lau.

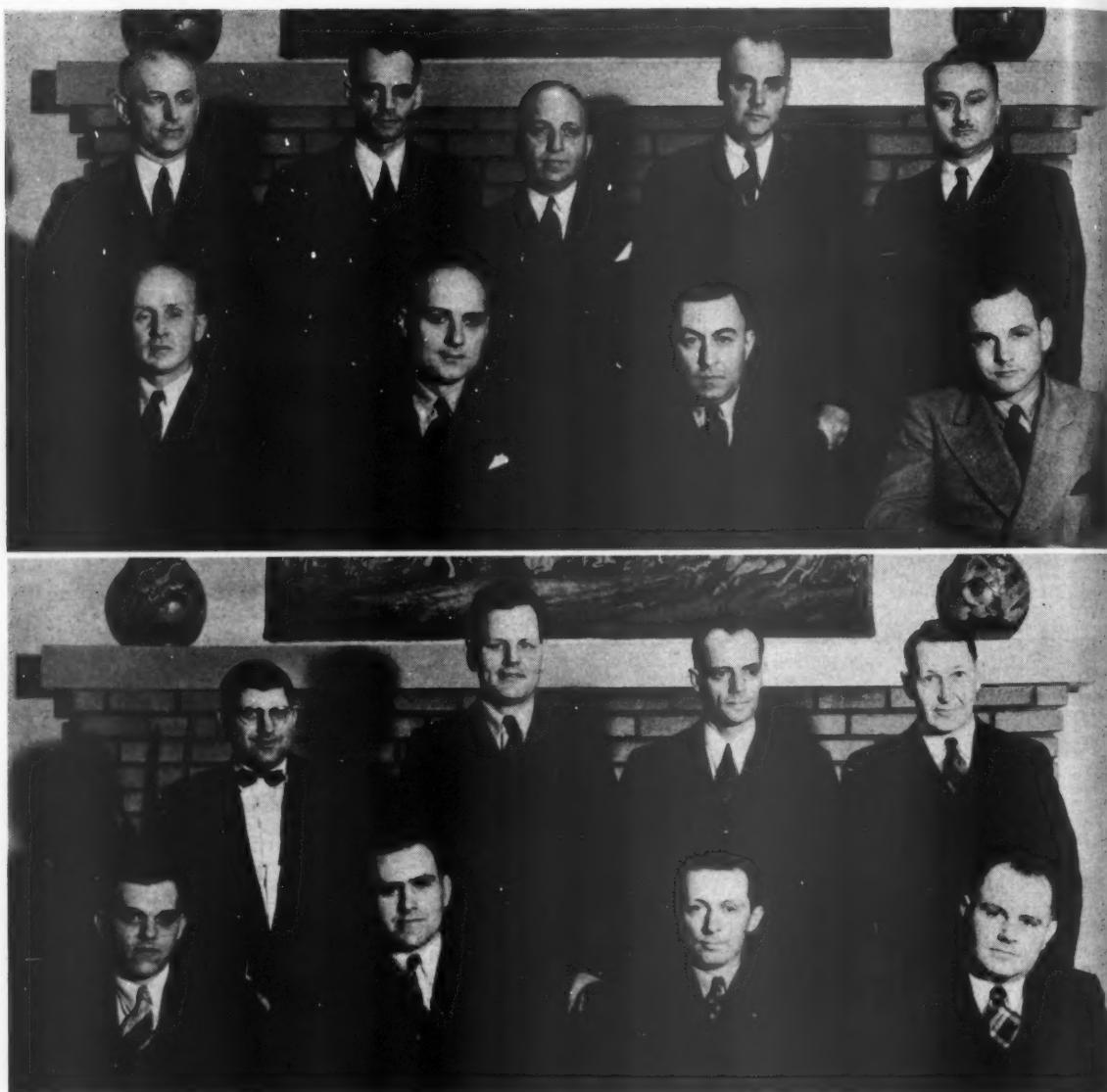
- K. J. Linehan, Harold R. Nevin, Emmett A. Scott, Clarence G. Shaw, J. L. Smith, T. J. Stenehjem, Franklin P. Winesett, Sprague N. Yeager.

Service Pin Awards

- Frank P. Youngman, assistant vice-president of the Crown Zellerbach Corporation awarded sixteen service pins at the banquet, thirteen to men who had worked for the Crown Willamette Paper Company for twenty years and three to



FOURTH YEAR GRADUATING CLASS of the CAMAS PAPER SCHOOL Standing, left to right: LAYMON P. BASTIAN, J. L. SMITH, SPRAGUE N. YEAGER, FRANKLIN P. WINESETT, T. J. STENEHJEM, PORTER T. DICKIE, MANLEY M. GREER, IRWIN JESSEN, R. C. HAYES, MILAN B. HILL » » Seated, left to right: EMMETT A. SCOTT, VICTOR C. LAU, CLARENCE G. SHAW, ROBERT HETHERINGTON, K. J. LINEHAN, HAROLD R. NEVIN.



AT THE TOP » » FIRST and SECOND YEAR MEN » » Seated, left to right: DON LUCAS, high man in the First Year Class; LOWELL WEILER, second high man in the First Year Class; CLIFFORD B. WISE, second high man in the Second Year Class; and, KEITH HILL, high man in the Second Year Class » » Standing, left to right, J. E. HANNY, Manager of Camas Mill; A. G. NATWICK, Assistant Mill Manager and Dean of the Paper School; GEORGE W. WISTING, Assistant General Manager and Manager of the Business Development Department of the Northwestern Electric Company who was the principal speaker at the graduation banquet; FRANK N. YOUNGMAN, Assistant Vice-President of Crown Zellerbach Corporation in charge of the Portland office; and W. R. BARBER, Technical Supervisor of the Camas Mill and Principal of the Paper School.

BETWEEN » » THIRD, FOURTH YEAR and HONORARY DEGREE MEN » » Seated, left to right: LEONARD M. SMITH, high man in the Third Year Class; CARLTON DUNCAN, second high man in the Third Year Class; CLARENCE G. SHAW, high man in the Fourth Year Class, VICTOR C. LAU, second high man in the Fourth Year Class » » Standing, left to right: FREDERIC R. SIEVERS, Honorary degree, Doctor of Philosophy in the Manufacture of Mechanical Pulp; ROBERT HETHERINGTON, third high man in the Fourth Year Class; ALBERT GUY NATWICK, honorary degree, Doctor of Philosophy in the Manufacture of Chemical Pulps; and ANDREW W. OLSON, honorary degree, Doctor of Philosophy in the Manufacture of Pulp and Paper » » JAMES W. DUVAL, who was awarded an honorary degree, Doctor of Philosophy in the Manufacture of Paper Specialties, was not present at the time this picture was taken.

men who had completed a quarter century of service:

The following men received twenty year service pins:

- Tom Carras, W. A. Boller, J. W. Scott, W. E. Ginder, E. L. Belknap, O. C. Rogers, C. B. McCracken, D. W. Herchberger, G. H. Chenakos, Walter Williams, W. E. Wright, M. W. Kincaid and L. G. Nielson.

- The three men receiving twenty-five year service pins: Frank Harbinski, W. T. Newcomb, and Gust Devalis.

Camas Mill Guests

- The following guests, members of the Crown Willamette Paper Company organization at Camas, Washington, who aided in conducting the Paper School, attended the graduation banquet:

- J. E. Hanny, mill manager; G. W. Charters, assistant mill manager; W. E. Lambert; Mrs. W. J. Van Arnam, H. Predinger, H. D. Kennedy, Geo. Knott, Fred Carey.

- W. C. Jacoby, I. C. Shotwell, E. W. G. Cooper, F. Sievers, E. Webberly, O. T. Defieux, C. Knapp, J. L. Shively.

- T. R. Martin, H. M. Green, W. J. Van Arnam, J. G. Long, Gus Ostenson, George Bailey, G. M. Julien, J. F. Roberson.

- Miss Christine Kropp, O. Michaelis, Geo. Williams, F. Williams, B. Weidenbaum, Wm. Hart, A. W. Olson, L. Burnett.

- H. Junge, L. D. McGlothlin, A. W. Neubauer, F. Stevey, H. W. Duvall, W. G. Goodwin, T. R. Goodwin.

- V. C. Gault, H. Glenn, C. Christiansen, F. F. Sullivan, J. H. Hull.

Guests

- The following were guests of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, at the Camas Paper School Graduation Banquet, March 2nd.

- A number of the guests had contributed lectures and moving pictures to the school sessions.

- G. H. Wisting, assistant general manager and manager of business development, Northwestern Electric Co., speaker of the evening; Carl F. Gaiser, in charge of purchasing, Portland Office, class lecture on purchasing; J. F. Grieve, Babcock & Wilcox, Portland, lecture on evaporation; Chas. A. Kaempff, Link Belt Company, Portland, moving picture on conveying; F. N. Youngman, assistant vice-president, Portland Office, lecture on sales problems.

- A. M. Mears, Pacific Coast Supply Company, Portland, two moving pictures; Arthur T. Brown, John A. Roebing's Sons, Portland, moving picture of Golden Gate Bridge; Paul Shuey, Johns Manville Company, Portland, moving picture on heat; C. E. Johnson, Portland Office; Harlan Scott, editor of Pacific Pulp and Paper Industry.

- D. F. Olds, superintendent of Camas public schools; John Brown, associate editor of Pacific Pulp and Paper Industry; Eva Santee, librarian, Camas Public Library.

- Harry Richmond, Electric Steel Foundry, Portland, lecture on heat transfer; P. B. Keyes, Goodyear Rubber and Asbestos Company, Portland; Milton Bona, Camas Post Record; J. W. Duvall, Perfection Twine Company, Camas.

Paper School Faculty

- A. G. Natwick, dean; W. R. Barber, principal (Also in charge of 2nd year class); F. A. Olmsted, vice-principal (Also in charge of 1st year class); E. H. Nunn, in charge of 4th year class; W. A. Kaye, in charge of 3rd year class.

- M. K. Rawlings, registrar; G. H. Gallaway, in charge of mill visits; R. G. Mispyley, in charge of photography; F. W. Flynn, in charge of 2nd year examinations; D. L. Shinn, in charge of 1st year examinations.

Powell River to Stop Five Days

- Owing to a continuation of dull markets, Powell River Company decided to shut down its mill for the five-day week beginning March 21 to give the market a chance to catch up with production. This is the first time in years that the big British Columbia newsprint plant has drastically curtailed production.

- Throughout the long period of readjustment in business conditions, when eastern Canadian mills were operating on slow schedules and producing at less than 70 per cent of capacity, Powell River Company machines continued to roll, with output over 80 per cent. During the past two years, the company was on virtually a 100 per cent basis, with a firm market for everything that could be produced.

- Heavy buying of newsprint at the 1937 price of \$42.50 in anticipation of the announced increase this year, combined with the business recession in the United States and lower consumption of paper, plus an almost complete breakdown in the Oriental field, influenced the Powell River Company in shutting down.

- "The shutdown is for only a very brief period, but we believe that it will be a factor in righting the situation as it affects our production and sales," said Harold S. Foley, executive vice president of Powell River, who returned only a few days ago from Florida, where he spent about two months.

- "Already, there has been some improvement in the market situation," said Mr. Foley. "General demand appears to be about the same now as it was a year ago, but foreign markets are quiet and there has been a material decline in buying in the domestic market, except in British Columbia and Texas. This is due to heavy inventories by publishers at last year's prices and a drop in consumption."

- Situation at Pacific Mills, Ltd., Ocean Falls, the other big British Columbia newsprint maker, is somewhat different inasmuch as only a part of its production is of newsprint. The company's two news machines are still operating on a five-day week basis, and there is no immediate thought of shutting them down even for a week, although this depends on the trend of the market. The wrap-

ping machines will probably continue in production anyway, as the demand for their product continues to be fairly strong.

There is still a large surplus of newsprint on the market, and at the end of January, despite the fact that all Canadian mills had been curtailing output, there was no appreciable decline in the available supply. At the close of February there was more than 400,000 tons of surplus paper on the American market, constituting a threat against the whole price structure until such time as stocks have been liquidated either through sharper curtailment of production or through an increase in consumption. The latter is not regarded as a promising prospect at the present time.

- Early last fall it was known that publishers had stocked up with far more than their normal requirements of newsprint, and that stocks stored in warehouses by the eastern operators before close of navigation had not been liquidated as usual owing to the drop in consumption.

Under normal conditions, the publishers carry between 35 and 40 days' reserve stocks. The mills carry about ten to fifteen days' supply to meet current needs, making in all about 50 days' supply on the continent. At the end of last year, aggregate stocks were 877,384 tons, compared with 525,187 tons at the close of the previous year, a net gain during 1937 of 352,197 tons. During January the official figures showed an increase in operators' stocks of 74,555 tons, while the indicated publishers' stocks dropped 66,905 tons, making a net increase in aggregate stocks of about 8,000 tons.

It is obvious now that there will have to be sharp curtailment of production for several months. Necessity for slowing down was appreciated by the industry early in the year, and without any definite program being initiated it was supposed that, with the five-day week in general application, shutdown during the Christmas season, and so on, the situation might gradually right itself during the first six months of the present year. However, while some mills curtailed about 50 per cent, others apparently have operated at more than 70 per cent, the average for the whole Canadian industry during the year so far being about 65 per cent.

Lebanon Works On No. 1 Machine

- No. 1 paper machine in the Crown Willamette Paper Company plant at Lebanon, Oregon, has a new concrete and steel foundation under the dryer section, put in place early in March. Work was completed about March 14.

Barber Back From Extensive Trip

- Wm. R. Barber, technical supervisor of the Camas mill of the Crown Zellerbach Corporation, returned March 1st after a month's trip through the south and mid-west. He visited California plants, then through the south along the gulf, and went on north to Chicago before returning to the Northwest again through California.

Analysis of Bisulfite Cooking Liquors With Calcium Hypochlorite

Calcium hypochlorite solution may be used as an inexpensive but stable reagent in the analysis of bisulfite liquors

by KENNETH A. KOBE and BERNARD A. BURKE*

BISULFITE cooking liquors are usually analyzed by either of two methods. In the standard TAPPI method¹ the bisulfite is oxidized with excess standard iodine solution and the excess iodine is backtitrated with standard sodium thiosulfate solution. In a separate sample the free SO₂ is titrated with standard alkali using phenolphthalein as the indicator. In the Palmrose method² the bisulfite is titrated with standard potassium iodate in the presence of potassium iodide and starch. The free acid formed is then titrated in the same sample with standard alkali using methyl red as the indicator. The Palmrose method has the advantage of using but one sample for both total and free SO₂ determinations and reduced cost due to the greater oxidizing value of potassium iodate.

Jackson and Parsons³ in 1937 proposed a method using sodium chlorite for the analysis of bisulfite liquor. Their method substitutes sodium chlorite for the potassium iodate in the Palmrose method. Their standard chlorite solution is standardized against bisulfite solution analyzed by the Palmrose method.

The introduction of calcium hypochlorite, CaO₂Cl₂, as a bleaching agent makes available a cheap oxidizing agent which may be substituted for the expensive reagents of the standard TAPPI and Palmrose methods for use in routine control analyses.

Kolthoff and Stenger⁴ studied calcium hypochlorite as a volumetric oxidizing agent. They found the solution is stable over long periods of time and may be used in both direct and indirect titrations. They determined ammonia by this method.

Experimental

Preparation of Calcium Hydrochlorite Solution

The solution of calcium hypochlorite is prepared according to the directions of Kolthoff and Sten-

ger⁴. For 0.1N solutions, 8 grams of commercial calcium hypochlorite is stirred with 200-300 cc. of water. The solution is allowed to settle and then filtered through a Buchner funnel. The filtrate is diluted to one liter. A black bottle, wrapped with black paper to insure no penetration by light, is used as a container.

The stability of a solution of calcium hypochlorite made according to these directions is given by the following table:

Time After Preparation Months	Normality Days
	1
	14
1	1
1	11
2	26

The solution is standardized against standard Na₂S₂O₃ in the following manner: To 25 ml of CaO₂Cl₂ solution add 1.0 to 1.5 grams of KI, 5 ml of 6N H₂SO₄ and titrate with standard Na₂S₂O₃.

Analysis of Bisulfite Solution

(1.) Determination of total SO₂. To attempt to use calcium hypochlorite solution in the same manner as potassium iodate usually meets with failure, especially with liquor whose free SO₂ content is low. Calcium hypochlorite solution gives quantitative results if the solution is first acidified with acetic acid or 6N sulfuric acid. The method consists of pipetting a 2.00 ml sample of liquor into an Erlenmeyer

flask containing 50 ml of water. About 2 ml of 10% starch-iodide solution is added, together with 10 ml of 6N sulfuric acid. The solution is then titrated with calcium hypochlorite solution until the permanent blue starch-iodine endpoint is reached. The volume of solution used is calculated to SO₂. The free SO₂ is determined by using a new sample and titrating directly with 0.1N NaOH, using phenolphthalein as indicator. The NaOH is calculated to SO₂. Total SO₂ minus free SO₂ equals the combined SO₂.

Sample of liquor taken from a digester at various stages of a cook were analyzed according to the method described above. The results obtained appear in Table I.

(2.) Determination of ammonia. Calcium hypochlorite solution may be used in the determination of ammonia. The hypochlorite must be standardized against Na₂S₂O₃ in the usual manner and against sodium arsenite solution as described by Kolthoff and Stenger.⁴

To 25 ml of standard As₂O₃ solution in a 250 ml Erlenmeyer add 10 ml of a solution of 10% KBr and 5% NaHCO₃. Titrate at a moderate speed with CaO₂Cl₂ until near the expected endpoint, add a drop of Bordeaux indicator and titrate dropwise with stirring until color fades. Then add another drop of indicator and if it does not fade add more CaO₂Cl₂, cautiously until a split drop causes the solution almost to "flash" from pink to color-

Table I

% Total SO ₂ CaO ₂ Cl ₂	% Free SO ₂	% Total SO ₂ KIO ₃	% Free SO ₂
7.42	3.25	7.39	3.27*
5.50	1.06	5.50	1.06*
3.59	1.69	3.62	1.69*
3.30	—	3.27	—
2.97	1.33	2.94	1.33
2.65	—	2.63	—
2.61	0.50	2.62	0.50*
2.48	1.09	2.48	1.09
1.75	0.70	1.73	0.70
1.33	—	1.29	—
1.08	0.60	1.08	0.60

*Liquor with no organic material.

*Department of Chemical Engineering, University of Washington, Seattle, Washington.

less or light yellow green. These indicator reactions are not reversible, hence one must make certain that the endpoint has actually been reached when color has faded. Test by adding more indicator.

In order to determine ammonia, control of the hydrogenion concentration is the important factor, and hence, under the proper conditions, ammonium bisulfite liquor may be analyzed for both ammonia and total SO_2 by means of calcium hypochlorite solution.

The first step is to determine the volume of hypochlorite used for the determination of total SO_2 by the method described above. For the ammonium determination a new sample is taken and the volume of hypochlorite corresponding to the SO_2 is run into the flask from a buret. A solution of saturated NaHCO_3 is then added until frothing ceases, and 10 ml of 10% KBr solution is introduced. The solution is then titrated with hypochlorite solution until a light yellow color appears, indicating an excess. The solution must now stand for three or four minutes. This time cannot be decreased. After this time has elapsed, 10 ml of sodium arsenite solution is pipetted into the solution. A few drops of Bordeaux indicator is added and the solution shaken. If the solution is not pink at this point add more arsenite and indicator until the pink color is permanent. Titrate the solution with hypochlorite until the solution flashes from pink to colorless or light green, exactly as in the standardization against arsenite. From the total volume of hypochlorite used subtract the volume corresponding to the SO_2 and to the arsenite solution. The remainder indicates the volume of hypochlorite required to oxidize the ammonia on the basis of 3 equivalents of hypochlorite per mole of ammonia.

- The results secured by this method were compared with those obtained by distillation. Table II.

In order to check the results obtained in the determination of ammonia, a sample of analytical grade ammonium chloride was weighed out into a 250 ml volumetric flask and made up to volume. The hypochlorite solution was used with aliquot portions of this ammonia solution. The amount of ammonia determined by the hypochlorite was compared to the amount of ammonia actually present in the aliquot part. Results obtained are given in Table III.

Acknowledgment is made to the Pennsylvania Salt Manufacturing Company for its donation of commercial calcium hypochlorite, "Perchloron", for use in this work.

Conclusions

1. Calcium hypochlorite solution may be used for the analysis of bisulfite liquors.

2. Calcium hypochlorite reagent is very inexpensive compared to the usual reagents. It is stable.

3. Both sulfur dioxide and ammonia may be determined in ammonium bisulfite liquors by the use of calcium hypochlorite reagent.

Literature Cited

- ¹TAPPI Standards, Method T 604 m-35
- ²Palmrose Paper Trade J. 100 no. 3, 38-9 (1935)
- ³Jackson and Parsons Ind. Eng. Chem. Anal. Ed. 9, 14-15 (1937). Paper Trade J. 104, no. 8, 122-4 (1937)
- ⁴Kolthoff and Stenger Ind. Enb. Chem. Anal. Ed. 7, 79-81 (1935)
- ⁵Kolthoff and Sandell, Textbook of Quantitative Inorganic Analysis, Macmillan Co., New York (1936), pp. 610-11

Table II

CaO_2Cl_2	Milligrams of Nitrogen	Distillation	
		% NH_3	Milligrams of Nitrogen
1.22	20.1	1.26	20.8
1.23	20.2	1.25	20.6
1.22	20.1	1.25	20.6

Table III

Milligrams of Nitrogen Present	Milligrams of Nitrogen Determined	% Error
6.73	6.76	0.45
6.73	6.65	-1.2
13.46	13.31	-1.1
13.46	13.30	-1.2
13.46	13.20	-1.9

Form Paper Makers Council on Coast

- The Pacific Coast Council of Paper Makers met in Portland, Oregon, February 18 and 19, and elected officers for a permanent organization.

R. T. Drummond, secretary of the Port Stockton local 320, was elected president, succeeding Arthur Hannaford, who has been appointed international representative. Harry Cole, secretary of the St. Helens local 331 was named vice president, and Percy Pollanz, secretary of the Port Angeles local 269 was elected secretary-treasurer. Lee Shannon of Camas local 130 and H. O. Leloff, secretary of Fort Vancouver local 298 were elected to the executive board.

Delegates were present from Antioch, Stockton, Salem, Oregon City, St. Helens, Camas, Vancouver, Longview, Port Angeles, Port Townsend and Spokane.

Mr. Pollanz was selected to represent the newsprint division, Drummond the board and board specialties division, Shannon the specialties division, Leloff the tissue division and Cole the kraft division.

Hoquiam First Aid Contest Postponed

- The first aid team contest arranged for representatives from eight Washington and Oregon pulp and paper mills will be held on Friday, April 1, instead of March 25, as originally announced.

The meet will be held in the Hoquiam high school auditorium at 7:30 p.m. Teams will be entered from the three mills of Rayonier Incorporated, and from five of the Crown Zellerbach Corporation units.

West Linn Selects Doctors

- The Association of Clackamas County Doctors received the non-industrial medical contract covering employees of the West Linn, Oregon mill of the Crown Zellerbach Corporation, as a result of an election held at the West Linn plant on Feb. 15. The contract is effective March 1 and is for a one-year period.

Occupational Disease Act Unconstitutional

- The Washington Occupational Disease Act, declared unconstitutional by the court in the Polson Logging Company case, has been appealed to the state Supreme Court. Attorneys have been retained by several industries, including pulp and paper, and by organized labor, to intercede in the appeal as a friend of the court.

In Sunny California

- Last month during the torrential rains in California the Monterey Herald proudly boasted that it had used more than 600 pounds of waxed paper during the week of February 6th to 12th in wrapping home delivered papers to keep them dry.

Proper and Safe Handling Of Chlorine in Tank Cars

By BRIAN L. SHERA*

THIS article is presented to aid in understanding the properties of chlorine and to promote the safe handling of this chemical. Chlorine, a chemical of wide commercial use, should not be feared, but should be respected as an article that is potentially dangerous if carelessly handled.

Chlorine is shipped as a liquid under pressure which readily changes to gas at atmospheric pressure. Liquid chlorine is amber colored and is about one and one-half times heavier than water. The gas, two and one-half times heavier than air, is greenish-yellow and has a characteristic suffocating odor. Liquid or gaseous chlorine are not explosive nor inflammable and, in the absence of moisture, are not corrosive. This element in the presence of moisture and higher temperatures becomes progressively reactive with nearly all substances. Therefore, moisture and heat should be avoided at all times except in the actual application of the chlorine to the process.

Physical Characteristics

- The variation of vapor pressure of liquid chlorine with temperature, according to Pellaton, is indicated below. It should be noted that there may be a slight variance from these figures in actual practice due to dissolved air and other inert gases present in the chlorine.

Temperature ° F.	Gage Pressure (lb. per sq. in.)
-30.1	0
-4	13.4
+23	30.5
41	47.8
59	69.0
86	111.7
104	149.0

Atomic symbol, Cl.

Molecular symbol, Cl₂.

Atomic weight, 35.457.

Boiling point (atmospheric pressure), -30.1° F.

Critical temperature, 294.8° F.

Critical pressure 1233 lb. per sq. in.

*Service Engineer, Pennsylvania Salt Manufacturing Company of Washington, Tacoma, Washington.

The heat of vaporization varies with the temperature—100 B.t.u. per lb. at 68° F., 108 B.t.u. at 32° F. The specific heat of the liquid is 0.223 B.t.u. per lb. per ° F. Density of chlorine gas is 0.2007 lb. per cu. ft. at 32° F. Specific gravity of liquid chlorine is 91.6 lb. per cu. ft. at 32° F., 88 lb. at 68° F. Its solubility in water per 1000 gal. at 104° F. is 38 lb., at 86° F. is 48 lb., at 68° F. is 62 lb. Below 49° F. chlorine forms chlorine hydrate with about twice its weight of water.

The viscosity of chlorine gas is 0.00014 poise at 68° F. and the liquid 0.0035. The viscosity of the gas is about the same as saturated steam and the liquid half that of water.

Manufacturing Process

- Chlorine is manufactured by passing a direct electric current through a saturated sodium chloride solution. The chlorine gas evolved is cooled and then thoroughly dried by contact with concentrated sulfuric acid. The dry gas is purified and then liquefied by subjecting it to pressure and low temperatures. From the refrigerating coils, it is loaded into storage tanks or tank cars. From the storage tanks the liquid chlorine is transferred for shipment into 16 and 30 ton tank cars; multi-unit cars of 15 one-ton containers; and 10, 15, 25, 50, 100, and 150 lb. cylinders.

Tank Car Specifications

- Chlorine shipments are regulated by the Interstate Commerce Commission and all equipment for its transportation must conform to the regulations of this body. Single unit tank cars are of the I.C.C. 105-A type. A four-inch cork insulation covers the entire tank with $\frac{1}{8}$ " steel outer shell protecting the insulation from the elements. The tank is provided with a dome centrally located at the top of the car. Located within the dome are one spring loaded safety valve, two gas discharge valves (transverse to car), and two liquid eduction valves (longitudinal to car). Each liquid valve is connected to the bottom of the car by means of an eduction pipe

equipped with a ball check valve which seats and stops the flow of liquid in case of excessive withdrawal, breakage of valve, or rupture of unloading line.

The chlorine manufacturers follow the prescribed regulations of the Interstate Commerce Commission in the maintenance of their equipment. At intervals of two years, or less, the tank and all appurtenances are hydrostatically tested to the prescribed pressures for thirty minutes (see tank car sketch). In addition to the required tests all valves are reconditioned after each trip in order to insure positive operation. The running gear, tank car shell, etc., are thoroughly checked before shipment. A moisture determination is made of the gas returned in the car. The test information and dates are stencilled plainly on each car.

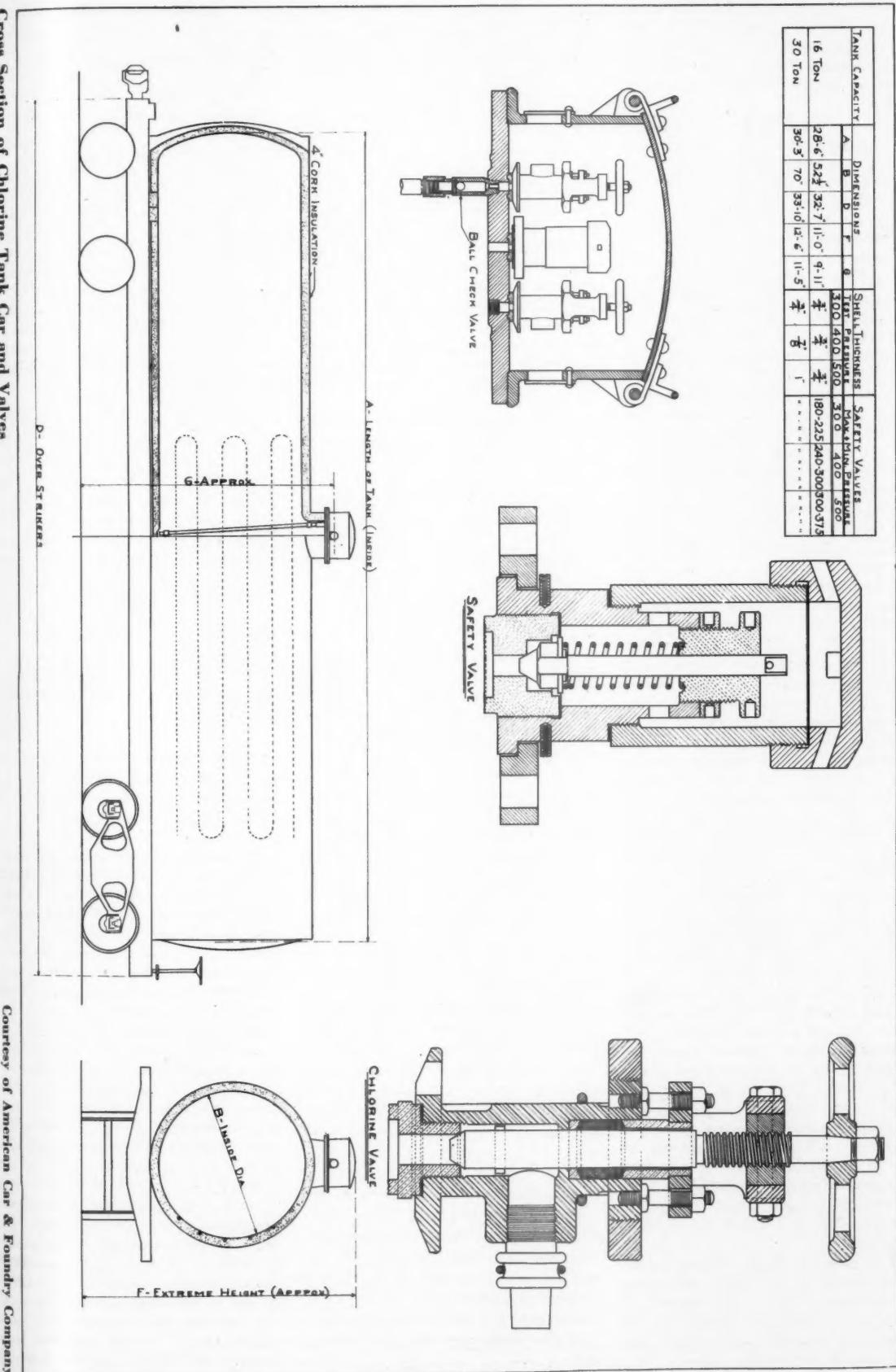
Shipping Regulations

- No shipment may be made of a leaking or defective car, all valves must be closed, caps, plugs, covers, etc., must be fastened securely in their proper places. Placards are placed on each side and each outside end of car carrying this information "COMPRESSED GAS — LIQUID CHLORINE." Rule 226 of the Bureau of Explosives requires that the party unloading the tank cars remove the placards before returning the empty car.

Unloading Tank Cars

- Cars must be unloaded only on a protected, private track of the consumer. Where possible a track should be provided solely for the unloading of chlorine. When chlorine is being unloaded on a siding used for other purposes, derricks should be placed at a reasonable distance from each end of the car and signs in large letters posted bearing the words "STOP — CHLORINE CAR CONNECTED." Red lights or lanterns should be provided at night at each end of the car.

Unloading the car and making or breaking connections should be made in well-lighted places. The car should be connected to the permanent piping by means of an S shaped $\frac{3}{4}$ " or 1" coil of heavy as-



Cross Section of Chlorine Tank Car and Valves

Courtesy of American Car & Foundry Company

nealed copper tubing for 500 lb. per sq. in. working pressure. The two valves, crosswise to the car, will furnish gas and the two valves lengthwise to the car will furnish liquid chlorine.

The valves are provided with 1" female standard pipe threads into which it is necessary to insert a 1" pipe nipple about 12" long to connect the valve to the flexible coil. Long running threads should be cut in the nipple and no worn or cross threads be used. Good pipe dope should be applied and main force should not be used to compensate for poor pipe work. This is most important as serious accidents have been caused by tank car valves being "cocked" by careless workmen.

Reliable and instructed persons only, should make up connections or unload the tank cars. The tank car valve must be closed, when unloading operations cease, and the liquid chlorine drained from the piping between the car valve and the first valve in the line, which should be located as near the car as possible.

The pressure within the car varies according to the temperature of the contents on the average probably from 30 lb. to 100 lb. "Air padding" or raising the pressure by means of oil free dry compressed air applied through the gas valve before shipment is limited by supervisory bodies. Low pressure due to cold weather or the necessity of raising liquid chlorine to elevated points necessitate tank car chlorine consumers providing means of increasing the gas pressure of the car after delivery.

This is best accomplished by simply raising the pressure with properly prepared compressed air applied through one of the gas valves. The air should be first passed through a liquid moisture trap and oil separator and then through a drying canister before being added to the car. A well constructed pressure regulating valve should be placed in the air line to prevent the car pressure from being raised too high. One hundred pounds gauge is usually ample for the total car pressure. Check valves should be placed in the air line as a safety measure to protect the air handling equipment in case the car pressure, for any reason, exceeds the air line pressure.

The tank car dome lid should be kept closed at all times when no work is being done in the dome and the dome lid must not be allowed to slam shut because such severe jars may unseat the safety valve.

Piping Chlorine

Since chlorine has such a low viscosity, it requires a first class piping job to hold it and its corrosiveness is such that a leak will not stop by itself, but only grow worse. Extra heavy piping is essential and the fittings and pipes should have clean, sharp, well-formed threads. For a permanent installation, a pipe dope of litharge and glycerine is found best. This should be well mixed to a thick, creamy consistency and should be applied only to the male threads and not allowed inside the pipe or fittings. The pipe and fittings before assembly should be free of foreign matter, which can be removed by steaming and blowing out with dry air. No moisture should be allowed in a chlorine line at any time as corrosion is rapid and the ferric chloride formed may clog meters or discolor the bleached product. If gaseous chlorine is desired the pipe line should be run on a rising gradient from the liquid container in order to prevent any condensed liquid chlorine from reaching the gas control apparatus.

Valves of approved design for chlorine are safer and found the best in handling chlorine. They should have wide and deep chlorine packing, a stem of suitable diameter to give strength and an outside screw and yoke. On liquid chlorine lines, an expansion chamber is a safety factor which it is well to provide. An inverted 100 or 150 lb. chlorine cylinder placed above the highest point in the line will provide a suitable expansion chamber. Liquid chlorine should not be trapped between valves in a pipe line without an expansion chamber because rising temperatures will create hydrostatic pressures potentially in excess of the designed strength of the equipment.

Chlorine manufacturers should be consulted in running new lines or in making radical piping changes as their engineering or service departments are trained for this work. On flanged fittings only chlorine resistant gaskets should be used. Lead with 2-3% antimony, Garlock 900, or equal, have been found suitable for chlorine service. Rubber, in any form, must be avoided. On new or repaired pipe lines or containers, chlorine gas should be used first to test for leaks instead of the liquid because the latter gives an unnecessarily large volume to be removed in case the pipes or containers are not tight.

Chlorine Leaks

Chlorine leaks can be readily detected by use of aqua ammonia. One way is to wrap a piece of waste or cloth around a stick and saturate with aqua ammonia. The reaction of ammonia vapor and chlorine produces a dense smoke-like cloud of ammonium chloride. The first rule to observe after locating a leak is to shut the container valves in order to stop the chlorine flow from the leaking pipe, valve, fitting, evaporator, etc. The line should be drained of chlorine either into the plant process or to the outside provided it will not endanger or inconvenience persons or property. In some cases there may be a large enough sewer flow to absorb the chlorine. Another convenient means is to absorb it in barrels of water into which 10 to 15 lb. of lime have been added. 1 1/4 lb. hydrated lime will be required for each 1.0 chlorine absorbed. No welding or other heating should be performed on chlorine lines or auxiliary equipment while containing chlorine gas or liquid, as the metal will lose its metallic state and become crumbly ferric chloride due to the reaction between dry chlorine and steel at elevated temperatures. It is known that temperatures up to 250° F. are safe on steel and chlorine provided it is absolutely anhydrous.

General Accident Information

Locating Leaks. This is best accomplished by swabbing the suspected points with strong ammonia water. A useful tool for this operation may be quickly made by wrapping a rag on a stick and then soaking it with ammonia water. The reaction between ammonia and the escaping chlorine results in the formation of a white cloud, examination of the vicinity and formation of which will reveal the point from which the chlorine is issuing.

Stopping Leaks. If the leak is found in the consumer's pipe lines or equipment, it may be quickly stopped by closing tightly the chlorine container valve and the consumer's auxiliary valves. All chlorine container valves close clockwise. If the leak is found to be in the container, steps should immediately be taken to correct it. Delays are dangerous since chlorine leaks will not take up but will get progressively worse. The leaking container should first be moved to the outside air or, in the case of a tank car, to the point on the consumer's private tracks where it will do the least harm. Leaking containers will not

be accepted by railroads or other carriers for shipment. Valve stem leaks may be stopped by tightening packing connections. Other container leaks may usually be stopped by using good judgment. All leaks may be lessened by lowering the pressure of the container. This is best accomplished by withdrawing chlorine gas from the container as rapidly as conditions permit. If absorbing the gas into consumer's process is not feasible, useful disposal mediums may be quickly prepared by making a lime slurry (10 lb. hydrated lime + 10 gal. tap water) or caustic soda solution (25 lb. caustic soda + 10 gal. tap water). This may be placed in a barrel or suitable tank. 1.25 lb. caustic soda or lime will be needed for each pound of chlorine absorbed. The chlorine gas is passed into the mixture through a rubber hose or iron pipe.

In case of a serious equipment leak or any trouble encountered with a tank car in the nature of leaks, broken or defective running gear, valves, etc., the car owner or the nearest chlorine manufacture should be called. On the Pacific Coast the manufacturers to call are:

Pennsylvania Salt Manufacturing Co. of Washington, Tacoma, Washington, telephone Main 4165, 4166.

Hooker Electrochemical Company, Tacoma, Washington, telephone Broadway 1215.

Great Western Electro-Chemical Company, San Francisco, California, telephone Garfield 8323; Seattle, Washington, telephone Seneca 0366 or telephone Garfield 7570.

The cause of the trouble should be carefully observed and described to the manufacturer, who will furnish instructions to remedy the situation or dispatch well trained service men to cope with the problem. Fortunately the rigid inspection to which tank cars are subjected at the manufacturer's plants limits tank car leaks to very rare instances. Chlorine users should encourage and train responsible men to handle their chlorine problems, and ask the chlorine manufacturers to aid in training the men for routine duties and for emergency work.

Employee Protection

- Provide physical examination, including X-Ray, of applicants for employment and of employees handling chlorine.

Every person whose duties may cause exposure to chlorine should be provided with a gas mask of a design approved by the United States Bureau of Mines for chlorine serv-

ice. Each person should have his own gas mask and understand thoroughly how to wear it, how to replace canisters, how to keep it in order and should always follow the instructions furnished with the mask. A bad gas mask is worse than no gas mask.

Additional gas masks in perfect order should be available at selected places in the plant away from the immediate point of use of chlorine, so that in the event of accident, other gas masks are also available.

When the odor of chlorine indicates a leak, the persons authorized to act in an emergency and equipped with gas masks should investigate. All other persons should leave the affected area. Hold drills at frequent intervals.

What To Do When Human Beings Are Injured With Chlorine

- Carry patient from gas area. Patient should preferably be kept in a room at about 70° F. Supply blankets if necessary. Keep patient warm and quiet. Rest is essential.

Place patient on back with head and back elevated.

Call the physician immediately.

Splashes of liquid chlorine and chlorinated water destroy clothing, and if such clothing is next to the skin will provide irritation and acid burns. In such cases remove clothes and keep patient warm with blankets.

Give carbon dioxide and oxygen mixture with not to exceed 7% of carbon dioxide. This mixture, ready prepared, and sold with the necessary apparatus, can be administered intermittently for periods of two minutes over a period not to exceed 15 minutes.

Milk may be given in mild cases as a relief from throat irritation.

If breathing has apparently ceased, start immediately the artificial prone pressure method of resuscitation (Shafer). Do not exceed 18 movements per minute.

Provide first aid as may have been prescribed for emergencies by your company physician pending his arrival.

Newspaper Recognizes Value of Pulp Industry

- It is news when a newspaper publicly editorializes on the value of the pulp industry to a community, a specific pulp company to a particular community. In recent years little appreciation has been expressed by the public of the

efforts of the pulp industry to maintain and extend employment. This attitude has been the same toward all industry. Indications are appearing that the public is beginning to realize that after all it is not the government that pays out the money but industry, which with agriculture creates the nation's wealth.

Under the heading, "PUGET SOUND PULP & TIMBER COMPANY IS ASSET TO WHATCOM COUNTY," the Maple Falls, Washington Leader published the following editorial on January 28th, 1938:

- "One institution that deserves news space in the Whatcom County news review is the Puget Sound Pulp and Timber Company. This concern is a real asset to this territory and provides payrolls that are very important to the well being of this section."

"This writer knows, as does most of the readers that concerns such as the Puget Sound Pulp & Timber Company are back-bone of a community, but as well known as this fact is, we are sometimes apt to lose sight of that fact. For this reason it is appropriate that news space be given to remind the readers of the concerns importance."

"This paper feels that without firms such as the Puget Sound Pulp & Timber Company, Bellingham would still be a fishing village. Through the efforts of this concern and its management it has maintained payrolls, and given local people employment that is very much appreciated."

"This writer takes pleasure in complimenting this firm and hopes they will continue in business for many years to come."

New Export Data To Be Available

- In response to requests from the trade for statistics showing monthly exports of wood pulp from the United States broken down by countries of destination, the Department of Commerce announces the availability of this new statistical tabulation.

These figures prepared by the Forest Products Division will show the quantity and value of exports of bleached sulphite, unbleached sulphite, soda pulp and other woodpulp. The subscription price for this statement will be the same as for others in the pulp and paper group, namely, \$1 per year to firms in the United States or in certain specified foreign countries, and \$2 per year to foreign firms.

The district office of the Department of Commerce located at 809 Federal Office Building, Seattle, will be very glad to assist in handling subscriptions for this new service. Its facilities are also available for inquiries on the foreign pulp and paper problems.

Wages Raised In Swedish Pulp Industry

- A new wage agreement was signed February 9th between pulp manufacturers and pulp mill unions in Sweden calling for an average wage increase of about 7½ per cent. The agreement is for one year or until February 1st, 1939. More than two months were required to negotiate the new agreement with the Swedish government as mediator.

A Versatile Crane System

The Paraffine Companies Have Developed a Highly Efficient Roll Handling System at Emeryville

By W. B. STITT*

ROLLS of roofing felt weigh from 1,000 pounds upward. Paper for the making of building sheathing is packed in rolls of probably half the weight of the felt rolls. The felt for printed felt base floor covering is made up into rolls each of which may weigh a ton.

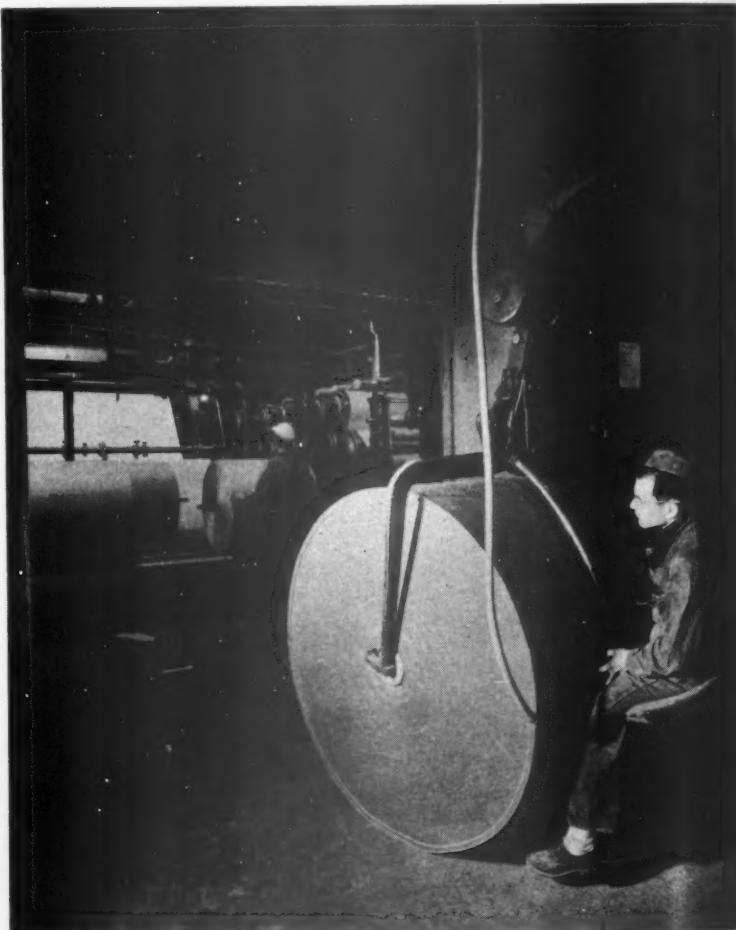
The Paraffine Companies felt mill at Emeryville, Alameda County, California, has a capacity of 100 tons per day. All of this material is handled in the form of rolls ranging in weight from 500 pounds to one ton. All must be handled either into temporary storage or direct to the saturating machines where it is made into roofing, building paper or the saturated base for printed floor coverings. This means that one hundred tons of felt per day in rolls must be handled at least once, but much of it—probably the greater part—must be handled twice. Since this is a regular chore, differing but little from day to day, the economic urge is that it shall be done at as little outlay as possible.

The ideal handling procedure has seemingly been worked out. The winder tenders on the felt machines have nothing to do with the disposal of the product of their respective machines. When they have checked the quality of the sheet and its quantity (as shown by the weight of the rolls from the winders) the winder tenders are through with the rolls. The rolls are then taken over by the crane man and either go to storage or to the saturating machines. The storage period may vary from less than a day up to several months according to the arrangements of the scheduling of runs in the plant.

As the Accounting Department requires considerable checking in connection with segregation of storage for each kind and weight of felt and each of the several widths which frequently occur in a single variety or weight of felt, and as almost the same checking work must be done in reverse order when the felt is taken from storage, it is ob-

vious that not less than one full time man must be employed during each shift on this work. In that time thirty-five or forty tons of felt and paper may be handled, necessitating at most some one hundred and fifty crane trips—which allows an average duration of but 3½ minutes per trip; actually the number of trips is short of this due to single handling of many items.

● A simple one-man crane permits this work to be done by a single operator on each shift. Without loss of time he is able to select one roll of any weight, width or kind from a storage capacity which may range up to 4,000 rolls, comprised in about eighty different weights, widths and kinds of felt and paper. A striking statistical estimate on the quantity of material thus represented is of in-



THE CRANE OPERATOR drops down to the winder, riding the tongs that pick up the large rolls of roofing felt » » » At all times he is close to the work being done and in sole charge of transporting finished rolls into and out of storage at The PARAFFINE COMPANIES large plant in Emeryville, California.

*Plant Engineer, The Paraffine Companies, Inc., Emeryville, California.

terest. If all this material, as represented by the stock in full warehouses, were unrolled and were in a 3 ft. width, the single sheet would reach from San Francisco eastward to the Atlantic Coast and beyond for nearly one-third the distance across that ocean.

Storage space for felt and paper at Emeryville is comprised in two warehouses each 76 by 130 feet in size. These warehouses are situated side by side; a space 153 feet by 26 feet is devoted to a common crane bay from which are served the systems of nineteen individual tracks in each warehouse. This common crane bay extends 66 feet further; this additional bay length covers the receiving space where rolls of felt are picked up after being weighed at the winder end of the two felt machines.

Operating Procedure

WITH pick ups originating anywhere in an area of half an acre, it is obviously impossible for a floor man to go from place to place to attach rolls to a crane lift. Stacks of rolls may be twenty or more feet in height. It is thus doubly out of

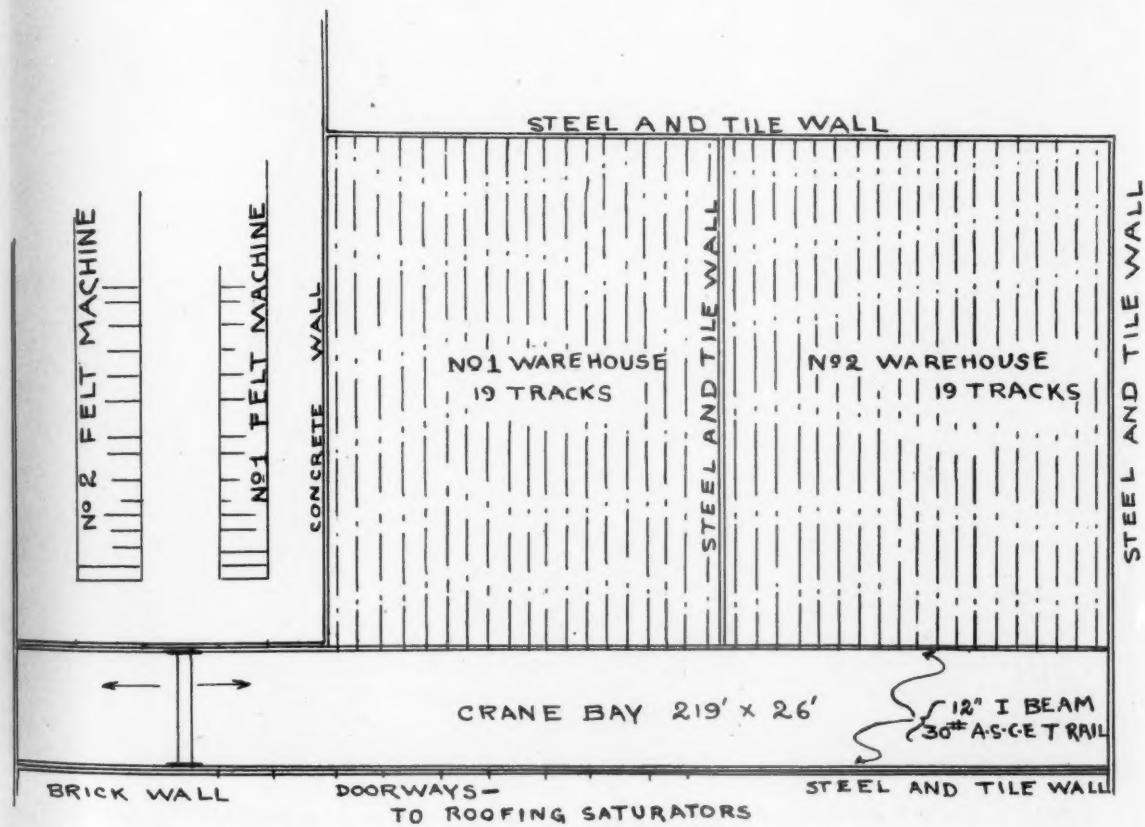
the question for a floor man to reach each individual roll without climbing over and between stacks; this would probably be tabooed by the Industrial Accident Commission; it certainly is by Pabco's safety engineering department, if no other factor should forbid, for the stacks of felt rolls might slip, producing a hazard to one working on or between them.

These considerations made it advisable that the crane man should practically "ride the hook" of his crane. He thus performs the duties of a floor man and also those of crane man, for wherever he goes he holds the control buttons in his hand.

The crane carriage in the felt warehouses is operated from two types of overhead construction. In the first (in the crane bay) the carriage runs on the bridge of a modified bridge crane. The travel of the bridge is 219 feet and the track for the cross travel of the carriage on the bridge is 24 feet long. The carriage while on the bridge can lift, transport, and deposit rolls in position to be taken away for further processing or can distribute in the

crane bay rolls which it has brought from the stacks of stored felt.

Referring to the diagram, it will be seen that each felt storage warehouse has nineteen tracks running at right angles from the crane bay. These tracks are 8-inch I beams. When the bridge of the crane is placed opposite any one of them, that one forms a continuous track inclusive of the 8-inch I beam track below the crane bridge; on this continuous track the carriage travels by means of motor driven traction wheels. In other words a roll lifted up by the carriage may be transported out of the crane bay by the carriage running to the end of the bridge and off onto one of the warehouse tracks. When the desired distance has been traveled the roll may be lowered and the hooks released, leaving the roll on the stack. The crane operator has gone with the roll, riding on a small seat mounted on a support affixed to the framing which carries the lower block, the lifting hooks and the hook release mechanism. If the stack is high, the operator lowers his roll to the top of it. If the stack is low, or if a new stack is being started



Rough drawing of The Paraffine Companies warehouse, crane track and crane bay layout showing efficiency of roll handling system.

on the floor, he rides down with the roll until it rests in place and he can release the hooks.

● In removing a roll from storage exactly the opposite procedure is followed. It is obvious that with some seventy-five or eighty different kinds, weights and widths of felt and paper, there will be more than one style of material under many of the individual lines of track. Some single items used in greater quantity may occupy more than one tier—some of the least used may be but a few rolls lying on the floor. However, each style of material is stored so it may be reached from above—no one style is stored on top of another.

Felt rolls taken from storage for conversion into roofing or for other processing are deposited by the crane at doorways along the side of the crane bay opening directly to the pick up portions of unwinders, where the felt is unwound for pas-

sage through the roofing saturating machines. Also a certain proportion of felt rolls are thus handled directly from the felt making machines to these doorways at the rear of the roofing saturating machines; these latter are rolls which are to be used at once, without being put into storage. The rolls of felt are rolled on the floor by hand for the distance of a few feet through the doorways.

The crane operator, riding on the saddle affixed to the hooks on the lower block, rides with his saddle suspended from the carriage. He may move in any horizontal direction determined by the coordinates laid out by main bay, in which the bridge crane runs, and the distribution tracks at right angles to the axis of the bay. Also he may ride up or down either when the carriage is in motion or when stopped. All controls for these motions are within reach of the operator in his riding seat.

Constructional Features

THE crane bay, 219 feet long and 24 feet 8½ inches (c to c of tracks) is spanned by a bridge crane on conventional tracks with electric motor traction. There are two controls on the bridge—one for longitudinal travel in the bay and the other a lock which secures the bridge with its pendant 8-inch I beam track exactly opposite any service I beam track in the warehouse. These controls are handled by four ropes which hang at one side of the middle point of the bridge and which may be reached at any vertical height above the floor.

Cross travel on the bridge is effected by a conventional carriage built for traveling on the bottom flanges of an I beam and with controls reaching to the floor, these controls being hoist and lower, forward and reverse buttons.

The service tracks in the warehouse section are spaced 3 feet 9



PICKING UP A ROLL OF ROOFING FELT from warehouse stock in The PARAFFINE COMPANIES plant at Emeryville » » The crane and operator are suspended from an overhead I beam tramrail of which there are nineteen in each of the two warehouses served by this one crane » » This flexibility gives efficiency in the handling of rolls into and out of storage.

inches on center. This distance was chosen because the greater part of the material handled is in rolls of 36-inch width. Where wider material is stored—as 54-inch, 72-inch, etc.—space under two, or even more, tracks must be used. So little of this wider material is stacked that the loss of space resulting is not of serious moment.

• The warehouse service tracks are eight-inch, eighteen-pound I beams secured to the lower flanges of the roof trusses which are 14 feet 7 $\frac{1}{4}$ inches on centers. There is a positive guard which prevents the carriage running off the bridge track when the bridge track is not in line with a service track. This guard consists of two steel wings, one on each side of the carriage, and a series of stops at the center points between service tracks. If the crane track is not exactly in line with the service track, one or the other of the wings on the carriage will strike a stop; this halts the carriage literally "in its tracks." In addition, the rope operated lock secures the crane track exactly in line with the service track; it corrects and maintains alignment so that jolts do not occur in passing from one track to the other.

All electrical drive is by 230 volt direct current. Sliding contacts take current from a T trolley rail alongside each of the track rails in the crane bay. The carriage receives current from similar T trolley rails on each side of the pendant 8-inch I beam track of the bridge. This, of course, is also the arrangement for current collection by the carriage throughout the service track system in the warehouses.

Crane Hooks

THE greater proportion of the rolls being 36 inches wide, it is possible to make a very simple set of hooks to engage the core at the center. This hook construction might be likened roughly to the bail of a bucket, though the actual hook set is hinged at the center. A compounded lever opens and closes the hooks and may be operated by the crane man from his seat attached to the lower block. While the weight of a roll is on the hooks it is not possible to release the lever. Thus falling of rolls from the hooks becomes an impossibility.

The crane hooks will open wide enough to take a 40-inch wide roll. Rolls of greater width are lifted by inserting plugs into the core holes; the plugs have short cables which

loop over spurs on the hooks. This places the roll somewhat lower than the crane man seated in his saddle, but does not cause inconvenience in operation.

A crane hook of modified type has been used where there is a more even distribution of widths of rolls. This does away with the necessity for using plugs and cables. In this case the horizontal bar of the bail is tubular in section and two tubular telescoping sections may be projected axially or retracted by a hand-wheel positioned immediately below the pin connecting the bail to the lower block. The hook arms are pivoted on the outer ends of the telescoping sections and just inside each pivot is a gear carrying a cam. Rotation of the gears and cams is effected by a hand lever through gear sectors on a shaft which has telescoping sections operating in unison with the telescoping movements in the horizontal body portion of the bail. The swinging of the hook arms on their pivots causes lugs on the ends of the hook arms to enter or to be withdrawn from the holes in the roll cores.

• These forms of hook construction and the entire crane system were developed by Leland S. Rosener, Consulting Engineer, San Francisco. They were installed and are maintained under the direction of James T. Coleman, Assistant General Superintendent of The Paraffine Companies, Inc. The Superintendent of Felt and Roofing Production is John H. Varley. General Superintendent is George Priefold, Sr., Vice-President in Charge of Manufacture.

These men, it is interesting to learn, have so arranged the system it can handle the mill products, whether they be old standards or innovations. That is important at Pabco where new items are constantly being turned out.

Paraffine Makes Many Products at Emeryville

• The aerial photograph on the cover of this number shows the large Emeryville, California, plant of The Paraffine Companies, Incorporated, also known around the world as Pabco.

Paraffine states that the first felt mill on the Pacific Coast was located at Emeryville, now their plant No. 1.

With affiliates and subsidiaries, including Fibreboard Products, Inc., Federal Container Company, Schumacher Wall Board Corporation, Charles Harley Company, Vitrefrax Corporation, Independent Paper Stock Company, Plant Rubber & Asbestos Works, and California Ink Company, Inc., The Pabco-Paraffine Companies, Inc., represents 55 plants, more than 5,000 men.

• At this locality more than six thousand items are made, including Inlaid, Battleship and Jasper Linoleum, Felt Base Rugs and Yard Goods, "Mastipave" (Industrial Floor Covering), "Mastipave" Tile, "Permanite" Insulating Roof Slabs, Roll Roofing, Composition Shingles, Building and Sheathing Papers, Roofing Coatings and Plastics, Interior and Exterior Paints, Enamels, Varnishes and Lacquers, "Coolite" Reflective Insulating Finish, Aluminum Paints, Marine Paints and Finishes, Termite Preservatives, Industrial Paints and Finishes.

Other Pabco-Paraffine products manufactured here and through its subsidiaries and affiliates are Boxboards, Solid Fibre Shipping Cases, Corrugated Products, Cartons, Egg Cartons and Fillers, Paper Cans, Tubes and Pails, Folding Boxes, Set-Up Boxes and Labels among others.

Credit Letters Approved For 1937 Jap Orders

• In February this journal published a report issued by the Bureau of Foreign and Domestic Commerce and coming from the U. S. Commercial Attaché in Tokyo, to the effect that the Japanese Ministry of Finance had approved the release of exchange to pay for unfilled and unshipped 1937 pulp contracts amounting to 58,023 tons valued at 16,967,000 yen.

A later report from the commercial attaché indicated that the Japanese Ministry of Finance did not release the letters of credit until February 28th covering the 58,023 tons mentioned above.

It will be recalled that these 58,023 tons representing unshipped 1937 contracts were to be apportioned over the first four months as follows: January, 15,210 tons valued at 4,439,000 yen; February, 21,681 tons valued at 6,368,000 yen; March, 12,580 tons, valued at 3,622,000 yen; April, 8,552 tons valued at 2,537,000 yen.

Japanese Imports From U. S. Gain 50% in 1937

• An extraordinary expansion occurred in Japan's trade with the United States during 1937, according to the Department of Commerce. Exports, valued at 639,428,00 (\$185,434,120) were up nearly 8 per cent from 1936, while imports, amounting to 1,269,542,000 yen (\$368,167,180), registered a gain of about 50 per cent over 1936. The excess of imports over exports in trade with the United States reaches an all-time high of 630,114,000 yen (\$182,733,060). This figure represents about 90 per cent of Japan's total import excess in merchandise trade for the year.

Shipments of raw silk to the United States declined about 3 per cent in value and 11 per cent in quantity from 1936. Cotton piece goods fell substantially below the fixed volume quota, while vegetable oils and electric light bulbs also lost ground. Material gains were registered, however, in exports of canned foods, silk textiles, pottery, strawbraid, and toys. The remarkable import gain was centered principally in hides and skins, pulp, phosphorites, iron and steel, automobiles and parts, ores, internal-combustion engines, and crude and heavy oils. Raw cotton dropped 17.7 per cent in value and 28.7 per cent in quantity. Lumber also fell off slightly.

MONASTRAL^{*}

FAST BLUE BWD

A dispersed pigment blue of exceptional merit

THE development of MONASTRAL Fast Blue BWD has provided the paper industry with a product of outstanding value and working properties.

MONASTRAL Fast Blue BWD is the fastest pigment blue thus far developed, being particularly resistant to:

LIGHT—ACID—
ALKALI—CHLORINE—

It produces very brilliant greenish blue shades on all grades of stock.

It is a highly dispersed fine powder and will develop very rapidly in the beater.

It is especially suitable for use on cover stock and any other papers where permanency of shade is desired. It is similarly recommended for the coloring of chemical and heat treated papers such as vulcanized

fiber, phenolic resin impregnated papers and parchments. It finds wide acceptance for wall-paper printing.

It is also classed as a specialty product which may be advantageously used in all special papers requiring brilliancy of shade and permanence to light and chemicals.

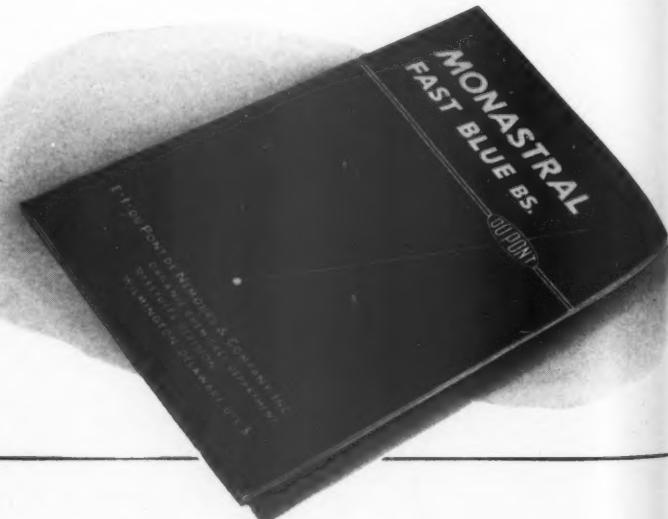
It is well adapted to use in coated

work, producing very brilliant shades ranging from a light to a deep blue.

In contrast with most other pigments, MONASTRAL Fast Blue BWD is retained well on unsized stock with only a small amount of alum.

Our new booklet describing all MONASTRAL Fast Blue types in detail may be had for the asking.

*Reg. U. S. Pat. Off.



E. I. DUPONT DE NEMOURS & CO., INC.

Organic Chemicals Department, Dyestuffs Division

WILMINGTON, DELAWARE, U. S. A.

Safety Work Brings Results In Coast Pulp and Paper Industry

**Reduction in Accident Frequency
and Severity Brings Lower
Insurance Rates**

THROUGH organized safety work, marked progress has been made by the pulp and paper industry on the Pacific Coast during the past few years in the reduction of frequency and severity of accidents occurring in the mills. The efficacy of this work has been indicated in the lowering of state industrial accident insurance rates, made possible by the increasingly favorable accident experience within the industry.

No phase of personnel administration has attracted so much attention and achieved greater results than the safety movement. It was not until 1906 that the first exhibit of safety devices and appliances was held in the United States, under the auspices of the New York Institute for Social Service. In the following year the American Museum of Safety was organized, and in 1912 a small body of engineers instituted the National Safety Council, with headquarters at Chicago, to carry on a general campaign against accidents.

Ever since, this organization, which includes thousands of industrial concerns, has assumed leadership of the movement for "safety first." The council is a cooperative, non-commercial, non-profit organization devoted to the prevention of both industrial and public accidents and the maintenance of the health of industrial workers. It contends that at least 75 per cent of all accidental deaths and serious injuries in industry can be eliminated, at a saving of hundreds of millions of dollars in workers' wages, and in costs of production to management.

The United States has taken the lead in safety in industry, and some remarkable achievements have been recorded by industrial concerns. Every accident indicates the presence of defective materials, machines or men, or, more commonly, a combination of all these factors. American experience suggests that many of these accidents are preventable. Prevention is the com-

bined task of the safety engineer, who is now an essential part of the staff of progressive companies, the whole executive force, and the workers.

- It has been estimated that 65 per cent of accidental deaths in industry are preventable by proper safety methods, and 24 per cent by necessary precaution on the part of the workers, while 11 per cent are the unavoidable risks of the trade. Such estimates have been substantiated by numerous corporations in whose plants accidents have been reduced by 60 to 95 per cent.

Many years experience with safety-first movements in this country indicate that 45 per cent of the results in reducing accidents have been obtained through effective organization, including a proper attitude on the part of management and officials, safety committees and inspection by workmen; 30 per cent through educational methods, such as instruction of employees, prizes, signs, bulletins and lectures; and 25 per cent by safeguards, including safety devices built about machines, proper lighting systems, and cleanliness.

Workers' safety committees meet at frequent intervals, make inspections of the plant at stated periods, and submit suggestions for improvements. The Chicago & Northwestern Railroad Company found that during the first three years of its organized safety work the employees' committee had reported 6,000 points of danger, and that 87 per cent of their recommendations were practical and had been adopted.

The benefits of organized safety work to the employer and employee are many. It helps to keep the organization intact, increasing production and reducing manufacturing costs. Losses incurred in breaking in new employees to replace injured ones are avoided. Medical fees and compensation awards are greatly reduced. A study of a large number of concerns shows that compensation costs for companies having no

organized safety movements are from 400 to 500 per cent greater than for those carrying on such work. And more harmonious industrial relations are cultivated by giving the workers a part in this important phase of industrial management and assuring them of the employer's interest in their welfare.

The work carried on in the pulp and paper industry has borne out these findings for industry at large. All Pacific Coast mills now stress safety work and have accomplished worth while results through it.

- For instance, the Hawley Pulp & Paper Co. at Oregon City has achieved a reduction of about 75 per cent in severity and frequency of accidents from 1932 to 1937 inclusive. This has been accomplished chiefly through removal of hazards and by education. The company employs a safety director, K. G. Urfer, and provides courses of instruction in safety work, first aid, etc., for the employees themselves.

The Everett Pulp & Paper Company of Everett, Washington, has consistently over its many years of successful operation promoted safety work throughout its organization. The company's accident cost (claims paid) decreased 55 per cent in 1937 below the 1936 cost. Everett's 1938 accident insurance rate is 39 against 42 in 1937 and 47 in 1936. The 1937 reduction was the result of constant attention to safe operation and despite the employment of a larger number of men and women than in 1936.

- The Soundview Pulp Company of Everett, Washington, has, through intensive work, reduced the frequency and severity of accidents in its mill even though the number of employees and hours worked were greatly increased during 1937 by the doubling of its pulp producing capacity.

Soundview's firm rate for the 1936 safety year, September 1st, 1935, to August 31st, 1936, was .0049. For

WEST COAST HEMLOCK PULP



PULP DIVISION ▲ WEYERHAEUSER TIMBER COMPANY

the 1937 year it dropped but one point to .0048. But for the present 1938 year the rate has gone down to .0041.

In the safety fiscal year of 1934 the number of workmen hours at Soundview amounted to 284,996. In 1935 they totalled 572,732; and in 1936 they rose to 616,111. The 1937 year showed a total of 952,201 workmen hours.

A concrete example of the accomplishments of this type of work is furnished by a summary of the results of safety work carried on during the past several years by Rayonier Incorporated and the Crown-Zellerbach Corporation, based on information collected by the safety committees of each mill. It illustrates not only the results obtained, but also the methods employed in analyzing accidents and the data derived as to accident causes, etc.

All of the information on which the accompanying tables are based is obtained from a special industrial injury report which is filled out for every reportable accident. These reports are taken to the safety committee meeting, and there all the information is put on and checked by employees. The data are not information of one man, but represent the combined work of the safety committee, thus are accurate as to true cause and nature. The report forms from each plant are gathered together and the statistics compiled for each plant.

A copy of the combined statistical report is put in the hands of the personnel manager at the plant, and of each foreman in the mill, so that he can see how his department stands and can stress attention to the most frequent types of accidents, occupations and nature of injuries. An earnest effort on the part of each foreman tends to reduce the major hazards prevalent in his department, and thus reduce accidents in general.

The accompanying tables represent an average of the statistics for six mills in the state of Washington, covering more than half the man hours worked in the industry in the state. The only exception is in the table showing the total number of lost time accidents. These figures are the totals for all six mills, instead of averages.

Although these figures are averages for six mills, the greatest accident reduction of any one mill was made by the Washington Pulp &

Paper Corporation. This mill reduced the number of reportable accidents by slightly over 52 per cent. This was accompanied by a 67 per cent reduction in accident cost in 1936 compared with 1935.

The results of the safety work in reducing the actual number of lost time accidents, or accidents which prevent the workman from returning to his duties at his next regular shift, are clearly shown. The number was reduced from 413 in 1935 to 331 in 1936, despite the fact that more man-hours were worked in the latter year. The reduction in this one year amounted to approximately 20 per cent.

The table disclosing the causes of accidents shows that human factors were responsible for 77.5 per cent in 1935 and 79.5 per cent in 1936. Accidents traceable to conditions of plant, tools or equipment were reduced from 16 per cent in 1935 to 10.5 per cent in the following year. Those unavoidable or due to weather or unknown conditions constituted 6.5 per cent in 1935 and 10.0 per cent in 1936.

The only accident causes which showed an increase in proportion were those due to conditions beyond control, and human factors. This shows real progress in eliminating accidents from causes which can be

Number of Lost Time Accidents

(Totals for six mills in Washington, representing more than half of the man-hours worked in the industry in this state).

	1935	1936
January	36	40
February	35	17
March	35	23
April	33	27
May	40	21
June	44	19
July	25	31
August	33	40
September	36	33
October	40	27
November	29	16
December	27	36
 Total	 413	 331
Man-hours	7,453,853	7,817,351

Reduction of number of lost-time accidents in 1936 over 1935 approximates 20 per cent.

Accident Causes

	1935 (%)	1936 (%)
Human Factors	77.5	79.5
Plant, tools and equipment	16.0	10.5
Weather, unavoidable and unknown	6.5	10.0

Types of Accidents in Per Cent of Total

Type.	1935 (%)	1936 (%)
Burns	4.7	6.7
Collision	1.2	.5
Caught or crushed between objects	8.6	8.1
Caught in rolls, reels, shafts, etc.	3.1	2.1
Cuts	4.3	4.0
Falling objects	11.9	10.2
Handling wood	5.7	7.6
Lifting	7.8	7.5
Objects in eye	13.4	10.4
Slipping	7.8	7.4
Falling and stumbling	6.1	4.8
Miscellaneous	24.4	28.1

An idea had to be threshed out . . .



... Collaboration with
VAUGHAN engineers
solved the problem . . .

The Screen Vat shown here is now efficiently performing its full duty in one of the large pulp mills of the Northwest.



Today it is actual reality; but months ago it was only a complex group of ideas in the minds of practical engineers.



The mill engineers knew what they wanted to accomplish. They also knew just what had to be manufactured to do the job.

Vaughan engineers were brought into the picture; various opinions were submitted and discussed; and construction work begun after all ideas were correlated into a practical, approved design.

The job was done, and the result has pleased all concerned. Such is the short story of another Vaughan achievement in collaboration with mill engineers.

May we collaborate with you to help solve your mechanical problems?



VAUGHAN
VAUGHAN MOTOR COMPANY • Ph. EA 1108



VALVES
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corrected by organized cooperative work between the management and the employees.

● The table showing the nature of injuries discloses that lacerations, cuts and bruises constitute the largest single class. The increase from 37.33 per cent of the total to 43 per cent from 1935 to 1936 is favorable, both in that this type of injury is usually less serious than some other classes and as indicating that employees are encouraged to secure prompt medical attention for even slight injuries. Strains, sprains, and dislocations were next in frequency, followed by eye injuries and fractures. The proportion of hernia, usually a costly injury, was reduced.

On the whole, this record is favorable in that it reveals a reduction in the more serious types of injuries.

The type of accident most frequently encountered is that of an

object in the eye, as shown by a separate table. This type was reduced from 13.4 per cent in 1935 to 10.4 per cent in 1936. This is also reflected in the study of accident causes, which shows that accidents caused by lack of or improper use of goggles, etc., were cut down during the period.

Falling objects were responsible for the next largest class of accidents, with being caught or crushed between objects the third most frequent type. The fact that miscellaneous types of accidents, those too infrequent to list separately for the purposes of this article, showed an increase in 1936, indicates that progress has been made in controlling the types of accidents most prevalent.

● Executives of Rayonier Incorporated and the Crown-Zellerbach Corporation, while pleased with the

results accomplished, realize the need of continued work to make safer conditions for employees in all departments.

Nature of Injuries, in Per Cent of Total

Type of Injury.	1935 (%)	1936 (%)
Amputations	2.00	1.165
Burns	4.33	5.33
Eye	14.00	12.00
Fractures	12.00	7.66
Infections	2.00	3.00
Lacerations, cuts and bruises	37.33	43.00
Hernia	1.33	.66
Punctures, contusions	10.00	6.33
Strains, sprains and dislocations	15.66	19.33
Gassed	.83	.50
Fatal	0	.16

Statement of Lammot du Pont*

Before the Special Senate Committee To Investigate Unemployment

Mr. du Pont presents economic facts
that ought to be of interest to every
American—Credits research
for increase in du Pont employees

In responding to the invitation to appear before this Committee, I want to make it plain that I have no theories to develop or panaceas to lay before you. The present situation is undoubtedly being explored before you by experts in economics, of which I am not one. The only contribution I can hope to make to your important study is from my own experience as a manufacturer, so I will present to you certain figures from the du Pont Company records with such light as they may throw on the national situation.

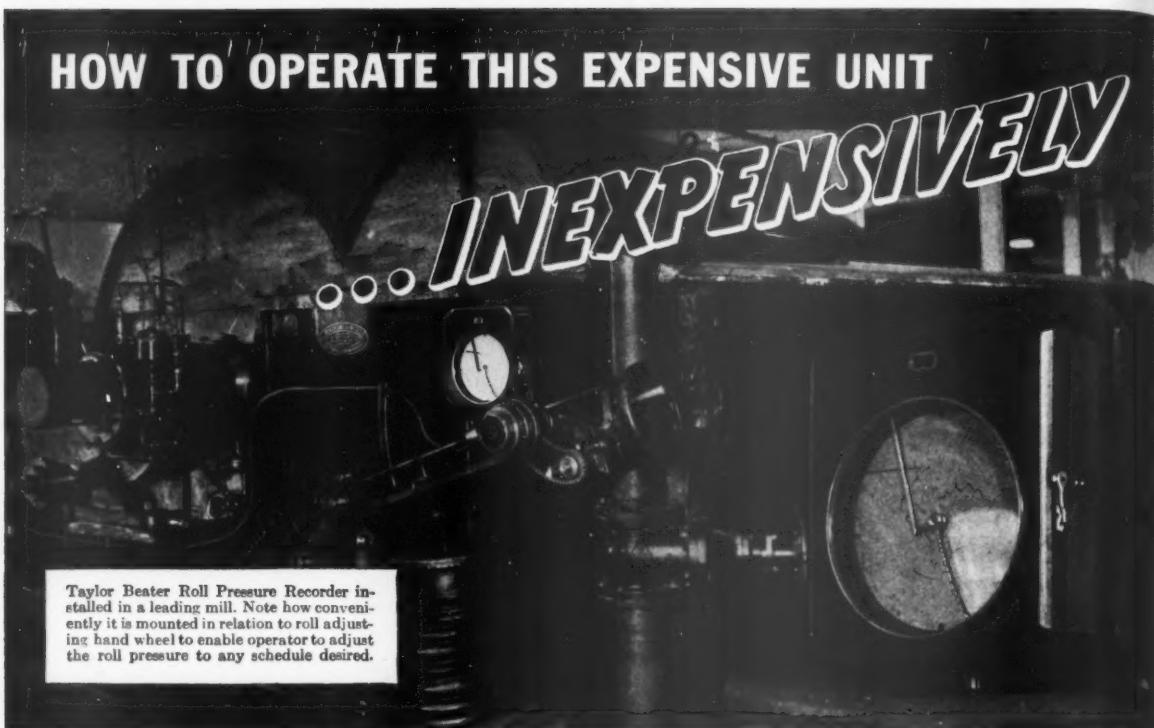
Your first question concerns the prospective unemployment and relief situation in the United States in the first six months of 1938. I am not in position to make any estimate of the general situation. In the du Pont Companies, however, the facts are as follows:

In 1929 the number employed by us was 42,000. This fell to a low point of 28,000 in 1932. Subsequently, our employment showed an almost continuous upward trend, reaching 55,500 at the end of December, 1936, and then rising to a peak of 59,800 in September, 1937. This declined by the end of the year to 51,600, which constituted a loss over three months amounting to 14%, and over the twelve months to 7%. At the peak of our employment last summer we had on our salary and payrolls 42% more people than in 1929, and at the year end we were employing 23% more people than in 1929. Our annual payroll at the year end was 40% higher, average monthly wages were 13% higher, average hourly wage rates were 26% higher, although the number of hours worked were 20% less than in 1929. Our total annual payroll in 1937 was 25% greater than for the year 1936.

Efforts to Maintain Employment

● Ever since our sales began to decline last spring, we have gone to the limit compatible with sound business practice to maintain employment and wages at the highest possible level. Throughout 1937 previously planned programs of expansion were continued and business-getting departments were maintained at full strength. There was no curtailment in advertising and sales promotion, nor in research work. Deficiencies in inventories were made up, but goods could not be manufactured for which customers were lacking. Readjustments in production schedules were made reluctantly as a matter of necessity and in accordance with the situation that existed in each of our numerous plants throughout the country, which varied greatly from plant to plant on account of the diversity of our business. Working hours were

*President, E. I. du Pont de Nemours & Company, Wilmington, Delaware.



**SAVE ON BEATING TIME AND POWER CONSUMPTION
GAIN IN INCREASED CAPACITY, MORE UNIFORM STOCK
WITH THE TAYLOR BEATER ROLL PRESSURE RECORDER**

THE MODERN BEATER is costly equipment. Owners of the unit above take no chances on operating it inefficiently. They adjust the roll to a definite schedule of pressure and time with the Taylor Beater Roll Pressure Recorder.

What would happen without this control?

Tests show that slight variation in stock consistency causes variation of over 360% in roll pressure with roll adjusted to definite position above bed plate.

Tests show that time necessary to bring stock to definite freeness may vary over 30% due to variation in roll pressure.

Tests show that power consumption per ton of stock may vary over 10% due to variation in roll pressure.

You pay for these variations in wasted

time, wasted power, in the unstable quality of the finished sheet. Taylor Beater Roll Pressure Recorder eliminates these variables, gives you a more uniform product at lower cost.

Actual experience proves the Taylor Recorder immediately lowers beating time. Beating capacity increases the same amount—without expense of additional equipment.

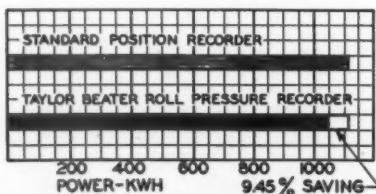
Operator can adjust roll to definite pressure schedule best suited to quality of pulp. By eliminating excessive roll pressure, power consumption has been reduced over 9% per ton. *This saving alone soon pays for installation.*

Beaterman can process stock properly to specified freeness, *regardless of normal*

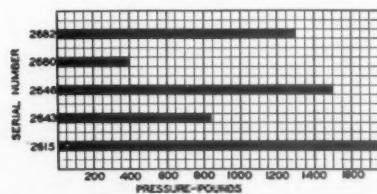
variations in consistency, and still maintain a strict time schedule. With the chart record he can duplicate any previous batch.

Let Taylor Engineers bring you this accuracy and economy, assure you of consistent high quality in finished paper. Get the full story of the Taylor Beater Roll Pressure Recorder. Ask a Taylor Representative for Special Bulletin 9810. Or write Taylor Instrument Companies, Rochester, N. Y. Plant also in Toronto, Canada. Manufacturers in Great Britain—Short & Mason, Ltd., London, Eng.

Pacific Coast Sales Office—145 Mission St., San Francisco, Cal., and Central Bldg., Los Angeles. Also, Terminal Sales Bldg., Portland, Oregon. Complete repair facilities for all Taylor Instruments are available in San Francisco. For your own protection, let adjustments or repairs to your Taylor Instruments be made by Taylor.



Comparison of power consumed on 35 beating cycles with roll adjusted by aid of standard roll position recorder, and 35 adjusted the Taylor way. Note that Taylor Recorder saved 9.45% in power by eliminating excessive roll pressures.



The same roll adjustment at the beginning of 5 beating cycles produced these wide variations in roll pressure because of normal variations in the consistency of each furnish. Pressures measured by Taylor Beater Roll Pressure Recorder.

Taylor

Indicating Recording Controlling
TEMPERATURE, PRESSURE, FLOW
—and LEVEL INSTRUMENTS

then reduced in plants where curtailment was necessary so as to spread work and limit lay-offs to the lowest minimum possible. It does not seem desirable to reduce hours below 32 a week as that would result in a drastic lowering of earnings that would do more harm than good. Men have been laid off only as a last resort, and junior men first.

Forecast for First Half Year

The first intimation of a changing business situation came in April. The decline in sales of our products that followed became precipitate in the late autumn. Our November sales were 17% less in dollars than in November, 1936, and in December 28% less than in December of the preceding year. Our forecast of sales for the first six months of 1938 is 23% less than in the first six months of 1937. I hope that this forecast proves erroneous, but on the basis of careful estimates I cannot be too hopeful of increased employment in our company during the first half of this year, for it is evident that we are in a pronounced recession.

Your next three questions concern unemployment compensation, assistance to the aged and other specified groups, and relief in its several present classifications. On each of these you have asked me to advance opinions as to their adequacy and possible effect in combating the losses in earnings brought about by unemployment during the next six months. My information on all of these subjects is necessarily most general and, consequently, any opinions that I might express would be of the same character and of little or no value to your inquiry. I request, gentlemen, that you let others more competent than I discuss these questions, as they are far too important for inexpert consideration.

As to the present business situation and the fog of uncertainty in which we seem to be blanketed, my views may be pertinent inasmuch as I am in close daily contact with industrial problems. My conception of private industry is that a manufacturing unit, a corporation, is a mechanism for assembling together capital and management to give employment to those not owning their own tools, or who are more effective when they are working together, so as to produce useful goods to be exchanged for the products produced by other corporations and individuals. The process is the same

whether a few band together as stockholders to form a small business of limited employing capacity, or a great number of stockholders join to create a large employing organization. One supplements and complements the other and the two are interdependent. It is a co-operative process, in which the different elements should function harmoniously and usually do, labor and other troubles being the exception rather than the rule and indicating where they occur some defective working of the machine. In the du Pont Company the prevailing spirit has been one of concord. We try to work together smoothly and effectively, and we believe we have satisfactory and mutually beneficial employee relations.

Defines Real Income

The interchange of goods between the different members of the community through the functioning of the innumerable units for production and exchange provides increasing quantities of goods and services for the people to enjoy. The sum total of the goods and services received by all the individuals of the country may be measured by money and constitutes the national income. That does not consist of money, for an increased dollar income may at higher prices purchase a smaller quantity of goods and services. As goods are produced more efficiently and sold at lower prices, they become available to more people and in greater volume. The standard of living rises. When this interchange of goods and services between the different groups of the community is facilitated, the real national income rises and the country becomes more prosperous.

DuPont Prices Have Declined

I have scrutinized du Pont prices to get some idea of our own performance in this process, and find that the weighted average of our sales prices declined 29% from the 1929 average to February, 1933, when the U. S. Bureau of Labor wholesale price index reached its low point of the depression. During the same period the U. S. Bureau of Labor wholesale price index of "all commodities except farm products and foods," which is reasonably comparable with our own index, declined 28%. Between February, 1933, and November, 1937, the U. S. Bureau of Labor price index of "all commodities except farm products and foods" advanced 28%.

However, our weighted sales price index for November, 1937, was still a shade lower than in February, 1933, and was actually 29% lower than the 1929 average. On the other hand, the U. S. Bureau of Labor index of "all prices except farm products and foods" for November, 1937, was down only 8% from the 1929 average.

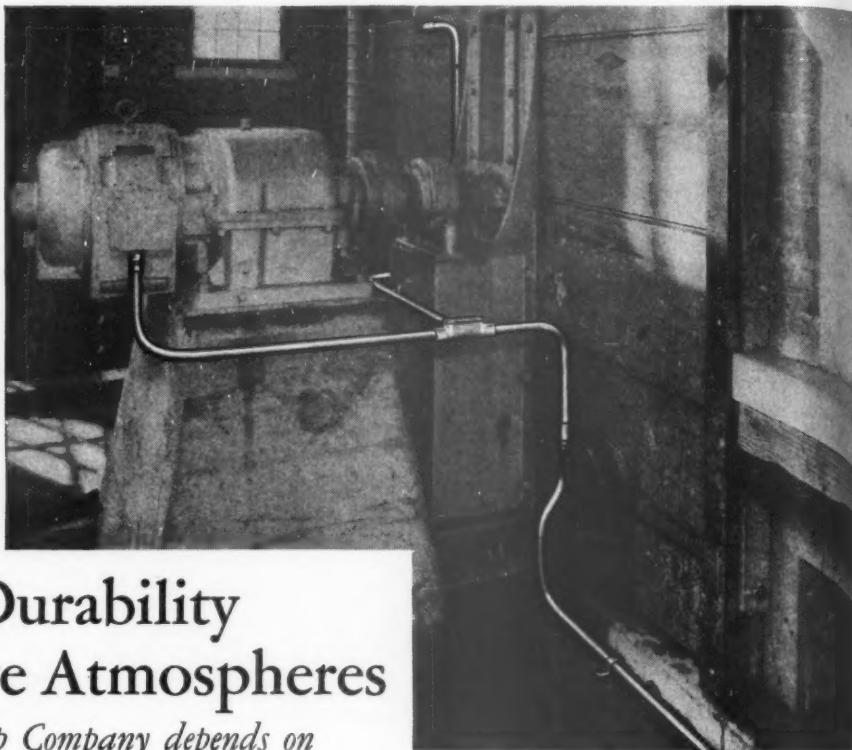
Taxes Up 211% Since 1933

This performance on our part was realized in the face of a 56% increase in hourly wage rates since the early part of 1933, a 75% increase in the average market price of the more important and typical commodities which we use in manufacturing, and a 211% increase in the taxes which we will pay for the year 1937 as compared with the year 1933. We have been able to achieve these results primarily because of three things—first, increasing volume, second, special attention to reducing cost of manufacture, and third, the further fact that many of our lines are relatively new, in which the opportunity for reduction of cost and therefore the lowering of prices has been greater than with older products.

As our prices have not advanced along with the general price increase since 1933, obviously our fixed charges such as taxes, depreciation, and return on investment constitute a larger proportion of our costs. We are now confronted with a lower volume of output unless business speedily revives, and we cannot prudently make much reduction from present prices if we are to maintain our present volume of employment and standard of wages.

May I say here that I believe in high wages and the increased buying power resulting therefrom. As I understand the matter from Department of Commerce reports, the national income that can be analyzed into employee income and property income respectively, flows over 80% to employees and less than 20% to capital. Employees' share of income in this country has been higher than in any other country in the world or at any other time in history, and it is well that this is so. There must, however, be a reasonable hire for the machines, tools, and other assets employed in business to insure the creation and availability of the needed capital in business enterprise. At the present time there is undoubtedly a shortage of venture capital, due to a number of

Everdur Electrical Conduit used around decker machine in the Soundview Pulp Company's mill at Everett, Washington.



For Durability in Corrosive Atmospheres

Soundview Pulp Company depends on

Everdur Electrical Conduit

TO OVERCOME service interruptions and premature conduit failure in a highly corrosive atmosphere, the Soundview Pulp Company selected Everdur Conduit.

Unusual resistance to a wide range of corroding agents...plus high strength and ready workability...make Everdur Silicon Bronze the metal best suited for the severe service encountered in pulp and paper mills. 50,000 pounds of this Anaconda alloy have been used in the Soundview mill for the stock and white water lines.

In the form of electrical conduit, this durable non-rusting metal is in use over blow pit tanks, around elevator pits where acid is washed down at cleaning time, and in other locations where rustable conduit quickly fails from the sulphurous fumes of the sulphite process.

Everdur Electrical Conduit is manufactured in standard sizes and in two wall thicknesses. It is listed and labeled by Underwriters' laboratories. Seamless, of uniform temper, and accurately cold drawn to size, Everdur Conduit can be cut, threaded, bent and assembled in practically the same manner and with the same equipment employed for steel conduit or tubing. Several complete lines of Everdur Fittings are available for use with Everdur Rigid Conduit or Everdur Electrical Metallic Tubing.

When its many years of trouble-free service are considered, Everdur Conduit is highly economical in price. Anaconda Publication E-12 describes this new product. For your copy, address The American Brass Company, Buffalo Branch, 70 Sayre Street, Buffalo, New York.

Everdur SILICON BRONZE

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"EVERDUR" is a trademark of The American Brass Company, registered in the United States Patent Office.

causes, which has been impeding the realization of innumerable projects throughout the country for the development of new enterprise and the expansion of production and employment.

● Our own position in this respect is somewhat fortunate inasmuch as we sold securities for \$48,000,000 early last summer to finance the development of our business. Our need for additional capital is apparent from the following figures. In providing facilities for new employment du Pont expended \$53,900,000 on plant extension and modernization in 1937. This was more than double the average annual expenditure for this purpose since 1929. Over the past eight years our total investment in new construction was \$194,000,000. This shows our faith in the future of American enterprise and is cited as an indication of one of the contributions in my intimate knowledge made by private industry to employment and progress. New construction outlays projected for 1938, according to the compilation that has just been made, approximate \$35,000,000. We are still looking ahead and hoping for better business.

DuPont Believes in Research

Much of the opportunity for making these investments has come about through the medium of scientific research, which we in the du Pont Company believe in.

Successful industrial research undoubtedly creates new jobs. More than that, it creates new wealth in the form of new materials that are, necessarily, either better or cheaper than those they supplement or displace, and usually are both. The result is a wider distribution of goods and a higher standard of living. Rarely is research successful except through patient, sustained work over a period of years, during which substantial sums must be expended long in advance of any hope of return.

Research demands long-term planning. Current outlays of money for its needs are aimed, in the main, at five, ten, or twenty years hence. Du Pont employment in 1937 was what it was, not because of that year's research, but because of money spent on research in 1932, 1930, and earlier. In line with long-established policy, this form of insurance on the future has been held intact by du Pont management regardless of the ups and downs of

sales charts. How such a policy affects employment can best be clarified by citing actual examples.

Examples of Research

● The du Pont Company entered the field of manufacture of chemicals by high pressure synthesis in 1926, commencing with the fixation of atmospheric nitrogen for the production of ammonia. This was done by the purchase of a process that had been developed in France. A plant was built at Belle, West Virginia, involving a large initial investment of capital.

If we had been making shoes or suspenders, we might reasonably have expected some return on our investment at the end of a year or two of operation. What actually happened, however, was that for the next seven years the Belle plant became to all intents a laboratory of constantly expanding proportions. A vast amount of technical knowledge had to be acquired that could be gained only through actual operating experience. Early costs were prohibitively high. The process of manufacture finally evolved bore little resemblance to the process we had bought, except in its fundamentals, and it was not until the eighth year—1933—that the operation began to show profit. To date our capital investment has been increased ten fold. Large volume was the only road to profit, and, in turn, the one road to large volume was low price. In following those twin highways, the engineers and chemists effected five successive price reductions that brought down the cost of ammonia 40% in seven years. The price thus established in 1933 has held since, despite increases in both labor and raw material costs, with the result that industrial users and fertilizer manufacturers are today paying only half as much for fixed atmospheric nitrogen as they did for the imported natural product prior to 1914. American producers are selling nitrogen for less per pound than any other producers in the world.

Take another example:

Perhaps the most outstanding of all du Pont research developments, both from the scientific and economic viewpoints, is the rubber-like material to which has been given the name neoprene. Unlike rubber in chemical composition, neoprene is an entirely new engineering material that fits into no existing classification. It looks like rubber, acts like rubber, serves where rubber serves,

and for innumerable uses it will outlast rubber by many times. The basic raw materials from which it is made are coal, limestone and salt, which we possess in abundance.

Research that led our chemists to neoprene began also in 1926. Almost six years of intensive work preceded the initial manufacture of their discovery on a small scale at Deepwater Point, N. J. And until the end of the year just closed, neoprene was produced at costs considerably in excess of its selling price, which was first \$1.05 per pound, then \$1.00, and then 75c as volume was progressively increased. Recently our chemists and engineers have been talking hopefully of neoprene's first profits—I said hopefully. Also they are talking—hopefully—of making a substantial addition to their present plant facilities. More than 200 manufacturers, including practically all of the principal producers of rubber goods, used neoprene in 1937, mainly for purposes that rubber itself could not serve satisfactorily, if at all.

Research Improves Existing Products

● Research may serve employment as importantly by improving an existing product as by discovering a new one. Striking example of this fact is found in "Cellophane" cellulose film. When introduced in America by du Pont, in 1924, through the purchase of the French patent rights, "Cellophane" was a product with a limited field and many faults. However, when research had found ways to render "Cellophane" moisture-proof, to strengthen it, and otherwise to adapt it to the needs of merchandizing, the new transparent wrapping material became a factor of first rank in all packaging. It inspired betterment of all wrapping materials, regardless of what made, and, significantly, more than paid its way by reducing losses suffered in many types of goods through spoilage and handling. The price history of "Cellophane" is one of 18 successive reductions from \$2.65 a pound to an average of about 41c a pound in 1936. This was increased by ½c last year. Since moisture-proofing was added in 1927, production has increased almost fifty fold.

Research Creates Jobs

I believe I have already indicated that the du Pont organization as a whole employed about 10,000 persons more on December 31 last than



Sections of our paper laboratory
adequately equipped to handle all
problems pertaining to the color-
ing of paper.



GENERAL DYESTUFF CORPORATION

435 HUDSON STREET, NEW YORK, N. Y.

were employed by it nine years ago. It is my carefully considered opinion that research efforts such as those I have outlined are due more credit for the gain in jobs than any one contributing factor.

Moreover, in any estimate of the effect research has had on employment over this period, consideration must be given to the fact that general business was below a normal level. What the same effort might have accomplished under conditions more favorable is something on which we can't even speculate. We do know, however, that at the peak of du Pont employment last year we were 19,000 jobs ahead of the 1929 monthly average. The estimate has been made, I believe, that for every man put to work in manufacturing industry, two and a half jobs are created in the so-called service occupations. If this is correct, the gain of 19,000 by du Pont companies was responsible for the employment of 47,500 persons elsewhere, making an overall gain of 66,500 new jobs.

- We can be prosperous only by serving better the diversified industries of America which use our products. We can hope to make a return on our investment only by continually developing new things for better living, which will on the one hand utilize the raw materials from farms, forests, and mines, and will on the other hand help other industries to employ more people and contribute to a higher economic development.

Factors in Present Uncertainty

Perhaps I have already indicated from the points made and the figures given some of my thoughts upon the present situation. At any rate it seems to me that some of the components in the present fog are uncertainty as to the amount or type of taxes, the fear of higher prices due to the steadily increasing public debt and the uncertainty as to the future value of money, the unprecedented number of strikes last year, the fear of further changes in and the multiplication of the legal rules under which business must operate. These influences were cumulative in their effects last year, leading successively to some speculation in commodities, doubts, loss of confidence, decline.

The Capital Gains Tax undoubtedly has the effect of deterring capital investment. If an investment proves successful, most of the profit goes to the Government. If unsuccessful, the individual bears all the

loss; the investor hesitates to wager several to one on a venture attended with such risk. The Undistributed Profits Tax inhibits the reinvestment of earnings of a corporation. If it turns in its need for capital to the investor public, it encounters today a lack of venture money. It cannot prudently use bank loans, which are short-time money, for venture purposes that require long-time patient money. Change of law with respect to these and certain other taxes, together with the simplification of the tax structure, would relieve management of some of the present worries, and give greater confidence for the future.

One of the greatest requirements of the present situation is industrial peace, effective co-operation of management and wage-earners. This, however, will not be best attained by complicated new legislation. The tremendous progress during our lifetime in increasing wage rates and in shortening the working day has been effected under the American competitive system and by the advance in public opinion.

- Further, I believe that business will recover only in an atmosphere of confidence in private industry, a wider understanding that the main burden of re-employment must fall on industry, not on Government. That recovery only comes about by a greater production and consumption of goods and services. The dissemination of this atmosphere should be fostered. Business must reassure the public that its services are essential, that it is in the aggregate, simply the way in which almost all of us make a living, and that farming, manufacturing, commerce, finance, and labor are inter-dependent. Government and business should take counsel together in a spirit of forbearance and cooperation.



To Discuss Australia As a Pulp Market

- Earl C. Squire, American Trade Commissioner to Australia for the past 10 years, will arrive in Seattle from Sydney on April 4th for two days of public appearances and conferences with business men on behalf of extended commercial relations between the two countries.

Mr. Squire, who has been in the service of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce since 1924, has been stationed at Sydney, Australia, since 1927 as Chief of all American trade relations with the Commonwealth.

Prior to his tour of duty recently completed, he acquired a substantial background for the post during a number of years spent in managing Governmental and private business enterprises in England and Germany.

He is a native of Michigan and following graduation from Albion College he studied at the Harvard Graduate School of Business Administration. After completing his education, he spent a year as assistant to the general manager of the Frederick Stearns and Company of Detroit and later was an efficiency expert for the Western Packing and Provision Company of Chicago. Later, after several years as the foreign representative of a large Chicago meat-packing company, in 1920 he opened his own office in London to handle the European accounts of numerous American companies.

At the request of the Secretary of Agriculture, Mr. Squire in 1921 made a survey of Europe to promote greater foreign markets for American meat production.

The following year he was instructed by the Department of Agriculture to open an office for that Department in Berlin. He remained there in charge of the office until 1924, at which time he again returned to the United States on leave.

That same year, Mr. Squire was appointed a Trade Commissioner of the Department of Commerce and assigned to open new office for the Bureau of Foreign and Domestic Commerce in Hamburg, Germany. After three years as head of the staff there, he was transferred to Sydney, where he has been actively engaged in furthering the best interests of American commercial ventures and in cementing trade relations between the two countries.

- His visit to Seattle will be devoted chiefly to conferences by appointment with importers, exporters and other interested business men, at the offices of Philip M. Crawford, Manager of the Bureau of Foreign and Domestic Commerce for this district, in suite 809 in the Federal Office Building.

He will also speak at a luncheon meeting of the Foreign Trade Committee of the Seattle Chamber of Commerce on Tuesday, and on Monday will address the Members' Forum of the Tacoma Chamber of Commerce.

He comes directly to Seattle from Los Angeles, where he will arrive from Australia the latter part of March. From here he will make an extensive tour of the United States before reporting to Washington, D. C.

Jorgenson Honored By Forestry Association

- Oscar Jorgenson, secretary of British Columbia Pulp & Paper Company, has been elected president of the Canadian Forestry Association of British Columbia, succeeding Fred B. Brown of the B. & K. Logging Company, Vancouver.

Among the new directors are A. E. McMaster, of Nootka Wood Products, Ltd.; J. A. Young, of Pacific Mills, Ltd.

Adhesive Products— A Busy Converting Plant

Where Pacific Coast made kraft paper
is turned into gummed tape

AN active and important coast paper converting plant is that of the Adhesive Products Company, Incorporated, of San Francisco, busy day in and day out manufacturing gummed papers from western kraft.

Jumbo rolls of raw material are shipped to Adhesive Products from Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, St. Helens Pulp & Paper Company and Longview Fibre Company. During a year, Adhesive Products will use around 500 tons of kraft from the Northwest.

Gummed papers from this San Francisco plant go out through western paper jobbers to manufacturers, retail stores, offices, bookbinders and other consumers.

● Bread and butter of the gummed tape industry is the manufacturer who buys 60-lb. weight, 3-inch width, sealing tape for binding fibre shipping cases. Plywood plants of the west use quantities of 90-lb. tape in wide widths for sealing their packages of plywood and take lighter weight, 1-inch width tape, for use in the process of manufacturing plywood.

Heads of The Adhesive Products Company are William L. Shattuck, president, and W. F. Harrison, vice-president and manager, the former handling sales and the latter production. This plant has been in existence for about 20 years, first as the California Gummed Tape Company and then the Bemis Gummed Tape Company.

Several years ago the late Paul W. Shattuck, with his son, William L., and Mr. Harrison, bought the Bemis company, reorganized it and changed the name to The Adhesive Products Company. Since then the firm has expanded its activities, becoming manufacturers of industrial adhesive of all kinds, as well as gummed paper and cloth products.

Interesting is the careful process of manufacturing gummed papers and the best way to describe the procedure is to take a quick trip through

the three-story plant with Mr. Harrison. Let's go!

● First step, in the basement, is where the 60-inch rolls of kraft are run off an "unwinder" to start on their trip through the continuous process. This "unwinder" does just what its name indicates. Right ahead of it is a "looping" table, where the open rolls are spread looped and loose before their ascent up a chute to the first floor.

Most important of the plant's function is the application of the bone glue to the paper. This is done on the first floor at what is called the "gumming head." Here the company calls on its well-equipped laboratory and here the laboratory assumes responsibility for the quality of the plant's output.

"For the sake of uniformity, control of the glue is all-important," says Mr. Harrison. "Several things determine the uniformity of the coating, most important of which are temperature and viscosity of the glue as it is applied to the paper.

The adhesive properties of the coating are determined by proper compounding of glues and other materials. Tension of the paper is vital."

Paper whirls through the gumming head at rates ranging from 170 to 225 feet per minute. Glue drops by gravity from two 5-barrel tanks, one of which is drawn off while the other is being mixed. Thermostatic instruments control the heat of the mixture.

From the gumming head the paper is sent over rollers into the dryer—a huge, inclosed wheel, 25 feet in diameter, revolving in its three-story iron housing. Air, steam heated to 250 degrees, Fahrenheit, is blown against the coated side of the paper as it passes through the dryer and dries the glue with a minimum injury to the paper.

Out of the dryer comes the gummed kraft and it is given a blast of humidified cold air which does two things—cools the stock and puts moisture back into it.



GUMMED KRAFT TAPE is the principal product of the ADHESIVE PRODUCTS COMPANY, located under one of the approaches to the Bay bridge in San Francisco.

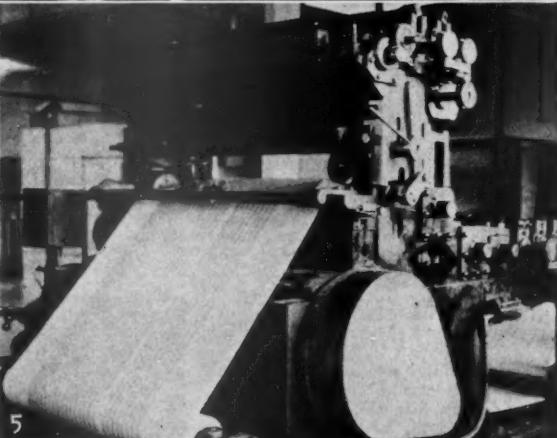
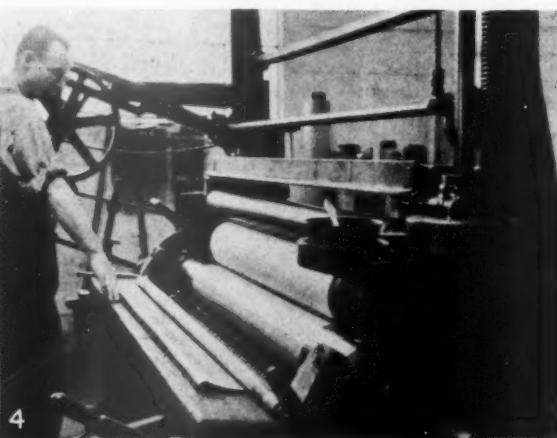
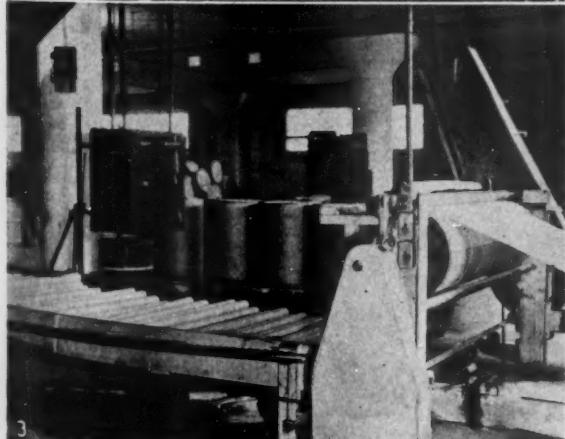
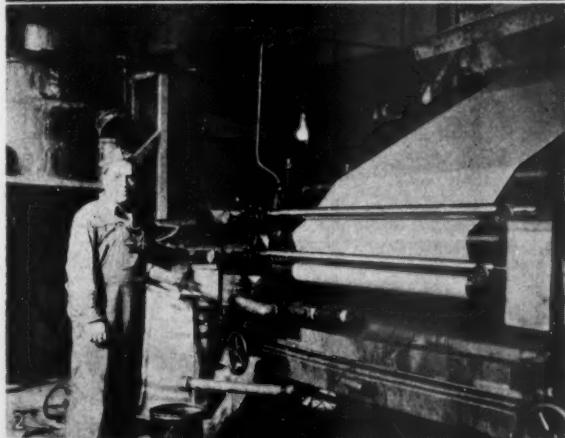
Now the kraft is wearing its coat of glue and once more is in the form of jumbo rolls. Upstairs, again, it goes, this time to the third floor, where there are slitters and printing presses to give it the dress and shape it takes as it goes out to ultimate consumption.

On the third floor, there's a big

color press where a 50-inch roll can be run through and printed, as desired by buyers. Then there's a single roll press which can imprint single strips of tape at a high speed.

Gummed papers are not the only products of Adhesive Products. The plant also makes gummed cloth papers of various colors. In this

process, the rolls of cloth are sent through dye vats and then to the gumming machines, where the cloth is first glued to the paper and then the remoistening gum applied to the paper. The corrugated box industry uses large quantities of this duplex tape. Adhesive Products also makes Holland gummed cloth for bookbinders.



PRODUCTION SCENES in the ADHESIVE PRODUCTS COMPANY'S San Francisco plant >>> No. 1, Laboratory with Head Chemist Herbert Carlson at work >>> No. 2, the gumming head on the paper gumming machine No. 3, the "Looping" table in the basement where the paper is unwound from rolls, looped loosely, before being conveyed up to the first floor for gumming >>> No. 4, is the slitter, cutting the gummed paper into narrow rolls >>> No. 5, shows the big printing press and No. 6, shows the finished product, gummed tape in rolls ready for shipment.

Trade-Talk



of Those Who Sell Paper in the Western States

Zellerbach Offers "The Very Idea"

● "Have you ever stopped to consider how many wonderful conveniences serve us in our homes today that we take for a matter of course? Paper, for example . . . it brings us the telephone number of someone we want to call. It protects the food we put in our refrigerators. It softly wipes cold cream from our face at night. Yes, paper performs a thousand and one services—more than most of us know."

Thus starts the initial "editorial" of a new publication—"The Very Idea," sponsored by the Zellerbach Paper Co. and intended for housewives throughout the west.

"The Very Idea" will share with you countless new and colorful and exciting uses of paper," the "editorial" announcement continues, "new ways to decorate your home; grand new kinds of parties that are easy and inexpensive to give; new ways to bring happiness into other people's lives through thoughtfulness; new recipes and new menus."

Through the pages of the first issue of this magazine are attractive pictures showing the various uses of paper in the household—towels, napkins, waxed paper, shelf paper, paper plates, paper cups, gift wrappings, table covers and even paper spoons and forks.

Del Monte Meeting May 12, 13, 14th

● Reservations have been made at the Hotel Del Monte at Del Monte, California, for an informal gathering May 12, 13 and 14th, of members of the paper trade from all parts of the Pacific Coast. It is understood that this meeting will replace the usual paper trade conventions held at Del Monte annually in the past. This will be a round-table gathering, at which will be discussed matters of common interest to all paper jobbers, including federal laws affecting their operations. There will be more social activities than in the past, it is expected, with the usual golf tournament staged by the mill men of the coast. G. J. Ticoulet of the Crown Willamette Paper Co. of San Francisco, has been golf chairman for several years and it is likely he will handle this work again.

Watson Vacations

● Reeve T. Watson, advertising manager of Blake, Moffitt & Towne, deserted his desk in San Francisco in February to take a snow vacation, spending a week by himself at Soda Springs, 7,000 feet altitude, on the Donner Pass Highway in the High Sierras. The snow was 15 to 21 feet deep, Reeve says, on the level, with 50-foot drifts. He spent a week skiing and getting a fine snowburn.

Fred Bergman Dies Suddenly

● Death came very suddenly March 7 to Fred Bergman, pioneer employee of the Zellerbach Paper Co., San Francisco. He was working at his desk and went to get a drink of water, when he collapsed and died. Physicians said it was a heart attack. Fred had been with the Zellerbach company since 1906. He was in his early fifties and was in charge of purchases for the wrapping paper department, working with Louis A. Colton, vice-president in charge of purchasing. Fred had friends everywhere.

Leatherman Heads Sacramento Ad Club

● Jack Leatherman, manager of the Sacramento division of Blake, Moffitt & Towne, has been elected president of the Sacramento Advertising and Sales Club. Jack holds the distinction of having headed advertising clubs in two different Pacific Coast cities, as he was president of the Seattle Advertising and Sales Club when he was sales manager of the BM&T's printing paper department in Seattle, before being transferred to Sacramento.

Paper Cups Make Toy Lamps

● Paper cups for toy lamps is a new use for paper, according to V. B. Krause, San Francisco representative of the Old Mill Paper Products Corp. Mr. Krause recently was visited by a toy manufacturer who wanted a figure on tiny paper cups for toy table lamps.

Mr. Krause reports that his firm's Seattle representative, William Segerstrom, recently moved to a new office at 229 9th Ave., South. In southern California their business is handled by Parker Johnstone.

Old Mill has been in San Francisco for more than two years and has more than doubled sales. Their specialty is crinkled cups made from Patapar manufactured by the Paterson Parchment Paper Co.

Horton Transferred By Zellerbach

● Wilmot Horton has been made the representative of the Zellerbach Paper Co. in the Tucson, Arizona, territory. He was transferred from Los Angeles to take over the duties of Roger Dennis, who went back to Los Angeles.



AUGUSTUS JOHNSON, who recently joined the Sales Promotion Department of the Zellerbach Paper Company in San Francisco and, on the right, BERT NEUMAN, Sales Manager of the Printing Paper Department of the Zellerbach Paper Company in San Francisco.

Bonestell Paper In New Home in April

• A huge golden-lettered sign "Bonestell & Co." and a fine building front with Venetian blinds decorate the property at 540 Howard Street, San Francisco, which will be occupied in April or May by this pioneer San Francisco paper jobbing firm. Bonestell & Co. have signed for a 10-year lease. The firm was established in San Francisco in 1852—86 years ago.

Hamermill Showing Movie

• "Voice of Business"—the Hamermill Paper Company film, is being shown at various San Francisco clubs under the direction of Frank Moon of the Zellerbach Paper Co. San Francisco Purchasing Agents Association saw it March 10. The film shows the manufacture of paper from stump to sheet. Logging scenes are from Canada and paper making from Erie, Pa.

Murray Attends Eastern Meeting

• J. L. Murray, San Francisco, sales manager of the Everett Pulp & Paper Co., left San Francisco February 17 for an eastern trip, on which he will attend several association meetings.

J. E. Horton, manager of stationery sales at Everett's San Francisco office, returned sunburned from Hawaii in February. He was there on business.

WASHINGTON NEEDS PUGET POWER



**PUGET SOUND POWER
& LIGHT COMPANY**

"To Best Serve the Public Interest"

American Sales Agency Sold Out for Year

"We are all sold up for the year on Scandinavian newsprint," says W. F. Dallam, San Francisco, American Sales Agencies Co., which represents several foreign news manufacturers.

American Sales Agency also represents the California Fruit Wrapping Mills of Pomona. Mr. Dallam says F. O. Fernstrom of this company was on a visit to Texas recently.

January Newsprint Figures

• Production in Canada during January, 1938, amounted to 222,500 tons and shipments to 159,107 tons, according to the News Print Service Bureau. Production in the United States was 72,514 tons and shipments 62,829 tons, making a total United States and Canadian newsprint production of 295,014 tons and shipments of 221,936 tons. During January, 22,852 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 317,866 tons. Total production in January, 1937, was 398,172 tons.

The Canadian mills produced 67,134 tons less in January, 1938, than in January, 1937, which was a decrease of twenty-three and two-tenths per cent. The output in the United States was 6,848 tons or eight and six-tenths per cent less than in January, 1937, in Newfoundland production was 6,324 tons or twenty-one and seven-tenths per cent less, making a total decrease of 80,306 tons, or twenty and two-tenths per cent below January, 1937.

Stocks of newsprint paper at the end of January were reported at 106,394 tons at Canadian mills and 25,924 tons at United States mills, making a combined total of 132,318 tons compared with 59,240 tons on December 31, 1937. During the winter some tonnage is accumulating at points from which water shipments will later be made.

In these reports, the term "Shipments" includes all tonnage invoiced to customers whether moved or not and the term "Stocks on Hand" all tonnage at mill or destination warehouse not yet invoiced to customers.

Federal Trade Commission to Investigate Newsprint

• Charges of monopoly raised by newspaper publishers on account of the raise in the price of newsprint to \$50 per ton on January 1st, has forced the federal government to make an investigation. The Department of Justice began an investigation of the newsprint industry in July 1937 (shortly after announcement of the \$50 price for 1938) at the request of John H. Perry, president of the American Press Association.



Mr. Perry suggested that the price increase announced by Canadian and domestic manufacturers might constitute a violation of federal anti-trust laws.

On January 19th, 1938, attorney general Cummings ordered the investigation transferred from the Department of Justice to the Federal Trade Commission. It was stated that the primary reason for the transfer was the Justice Department's lack of authority to subpoena witnesses and take testimony under oath. The Federal Trade Commission has both subpoena power and authority to issue "cease and desist" orders against unfair business practices.

Gordon of Acme In East

• Arthur Gordon, president of Acme Paper Co., San Francisco, spent February and early March on an eastern trip seeking new paper lines. He looks forward to a good business year.

Readon Moved to San Francisco

• Harold Readon has been transferred by Zellerbach Paper Co. from San Diego to the sales promotion department of the San Francisco headquarters office.

Shaw on Sick Leave

• On sick leave in March was Walter Shaw, a veteran Zellerbach Paper Co. salesman in San Francisco.

PULP BLEACHING COMPANY

ORANGE
NEW JERSEY

CELLULOSE
PURIFICATION

"NON-USERS
ARE THE
LOSERS"

FINISH AND SPEED

TENAX
FELTS

Abundant

..... Water removal without resultant loss of finish. TENAX FELTS are so designed as to deliver the optimum in Finish without consequent loss of de-watering features.

TENAX FELTS provide Maximum Efficiency.

"Non-Users Are the Losers"

LOCKPORT FELT COMPANY NEWFANE, N. Y.

Pacific Coast Representative: ALAN C. DUNHAM, Portland, Ore.

Production Ratios Improve Weekly

● The weekly production ratio reports of the American Paper & Pulp Association are recording a gradual increase in the production of paper from the low point reached in December, 1937.

After reaching a high point in April last year of 92.1 per cent, the ratio dropped to 54.5 per cent in December. January 1938 showed an average of 63.9 per cent and February averaged 69 per cent although each succeeding week in February showed improvement. The week ending February 5th was 66.2 per cent; ending February 12th, 67.9 per cent; ending February 19th, 70.2 per cent; and, the week ending February 26th, 73.2 per cent.

These increasing ratios mean that wood pulp is being consumed at a slowly growing rate and that, although the process is slow, inventories of pulp are on the way to being lowered to a more normal basis.

Tacoma Man Wins Vacation Trip

● As the result of a sales contest held last year by the Rochester Paper Company, manufacturers of blotting papers at Rochester, Michigan, Gus W. Paul, department manager of the Standard Paper Company, Tacoma, enjoyed a six weeks cruise with Mrs. Paul to South America.

Mr. Paul was one of two Pacific Coast winners, the other being Carter, Rice &

Company, Incorporated, of San Francisco.

The contesting paper distributors were divided into eleven divisions according to their previous year's volume. The Standard Paper Company and Carter, Rice of San Francisco were winners in their respective divisions. The six weeks trip awarded the high company in each division included a visit to Rochester, Michigan, the trip to New York and the cruise on the Statendam to Puerto Rico, Martinique, Barbados, Trinidad, Curacao and ports on the Atlantic coast of South America.

Canadian Thinks Orient Pulp, Paper Market Will Revive

● British Columbia pulp and paper markets are discounting the Chinese market at present, but they have not forgotten it, and they have been encouraged by M. T. Stewart, assistant Canadian trade commissioner at Shanghai, who says that Canada should continue to play an important part in the Chinese pulp and paper trade.

B. C. Pulp & Paper Company had until recently regarded China and Japan as one of their chief markets, and Pacific Mills, Ltd., and Powell River Company also shipped pulp and paper there. Port Mellon Operating Company, Howe Sound, was forced to close down because of inability to ship to the Orient owing to the Sino-Japanese war.

Hostilities still cloud the prospects for the immediate future, report Mr. Stewart, but he recalls that in 1937 Canada was second only to Germany in shipping

newsprint to central and north China, the total being 20,068 tons valued at \$940,718 in Canadian funds. Germany's shipments were valued at \$2,115,485. Total newsprint imports of north and central China last year were valued at a little more than \$6,000,000.

"The entire paper trade up until the outbreak of the war was in an extremely satisfactory condition," says Mr. Stewart. "But today even the most experienced traders and others who are closely in touch with development can only conjecture as to future conditions. Rehabilitation must be a relatively slow process. However, it must be borne in mind that the Chinese have proverbial powers of recuperation, and this market should always be an important one for paper producers. Canada, by reason of her proximity to the market, combined with her natural manufacturing facilities, should continue to enjoy a leading position—notably in newsprint and kraft paper.

● "Canada's interest in the Chinese market dates pretty much from 1931, when British Columbia companies made a strong bid for the trade. The Chinese boycott of Japanese newsprint helped, and Japan was not an important factor before the war. German prominence began with the Berlin government's policy of assisting exporters through the operation of exchange compensation schemes. Those were not altogether satisfactory, however, and when peace prevails in the Orient it is generally expected that Germany, whose prices were usually above world parity, will drop from leadership, probably yielding her place to Canada.

Proposed British Treaty May Hurt Paper Industry

• Warren B. Bullock, manager of the Import Committee of the American Paper Industry presented the following report concerning the paper industry's interest in the proposed reciprocal trade agreement with Great Britain to the Board of Governors of the American Paper & Pulp Association on February 24th, 1938:

"Since the announcement by the State Department of plans for the negotiation of reciprocal trade agreements with the United Kingdom and Canada, the Import Committee's staff and counsel have been devoting intensive study to the preparation of briefs in defense of the present rates of duty on the papers which are listed for consideration in these agreements.

"This task, important as it is, however, has not been allowed to interfere with the Import Committee's uninterrupted efforts to check unfair foreign competition, in which it has been so successful during all the fourteen years of its existence. Within the last few days a case affecting the dutiability of groundwood papers was tried before the United States Court of Customs and Patent Appeals. Other such duties have been carried on, despite the serious problem faced in combatting any reduction of duties in the pending reciprocal agreements.

"If the papers listed for consideration in the Canadian and British agreements are finally subjected to duty revision, the entire tariff schedule as enacted by the Tariff Act of 1930 will have been rewritten. Hardly any major grade of paper will have escaped the pruning knife of the State Department. The situation is the most serious since the reciprocity agreement twenty-five years ago presented the United States newsprint industry to Canada.

"In combatting reductions in the duties on papers, the paper industry has been faced with the strangest situation in American tariff history.

"Tariff laws have been written by Congress, since the first days of the republic. The enactment of the Reciprocal Trade Agreement Act, however, gave to the Secretary of State the power to revise all customs duties as he may see fit, subject only to the limitation that no duty can be reduced more than 50 per cent of the rates fixed in the Act of 1930. There is no recourse to Congress from any action he may take.

"Without questioning motives, or the high principles which have been announced as the basic principles upon which these agreements are being made, it is a fact that this one-man tariff revision is in the hands of one who has always been a low tariff advocate and who was such an advocate when still a member of Congress.

"In the face of the threatened reduction of tariff rates, the American paper industry has done its best to prevent unjust tariff reductions by demonstrating the damage which such agreements will do to the industry. Briefs have been prepared by the Import Committee and filed in the name of the American Paper and Pulp Association on every pending reciprocal trade agreement in which paper might be a factor.

"Despite these briefs and the oral appearances by prominent paper manufacturers at the hearings on these trade agreements, severe reductions have been made in many vital portions of the tariff schedule. Wrapping paper for instance, was reduced in the Swedish agreement, and the Finnish agreement still further reduced the duty on kraft.

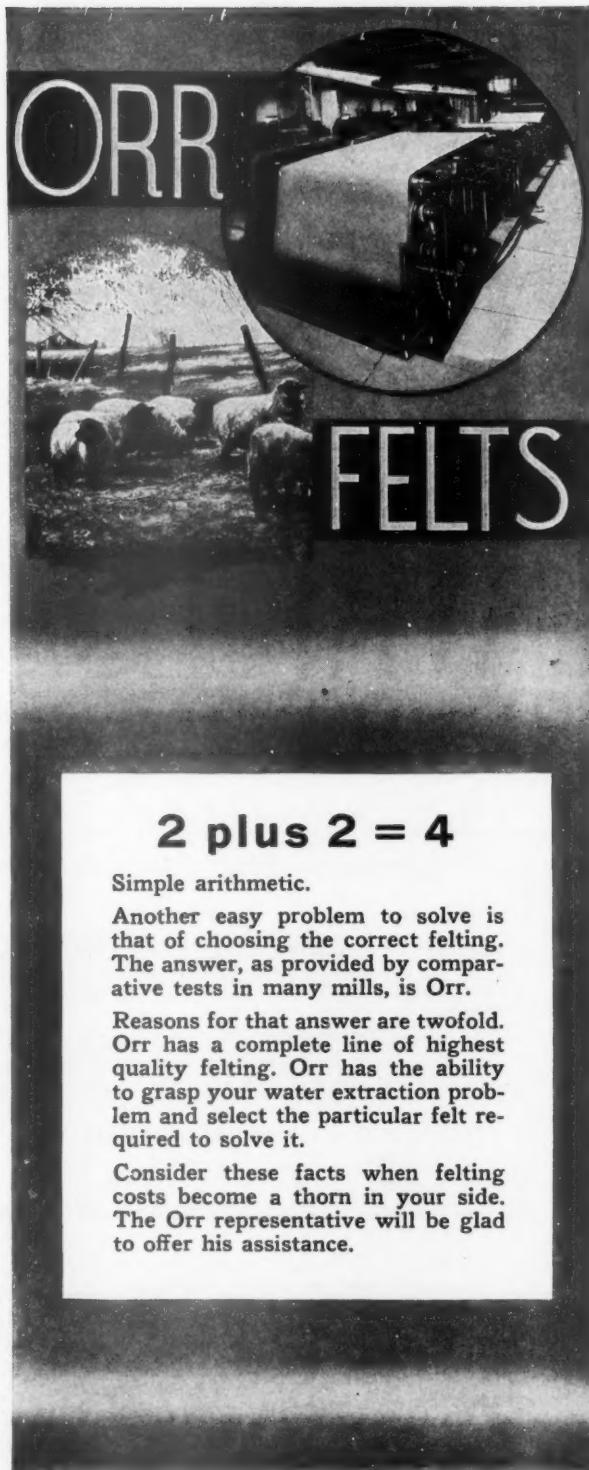
"The British and the Canadian agreements, however, definitely indicate a possibility of reductions in the parts of the Tariff Act where the damage to the paper industry would be greater, through tariff reduction, than in any other part of the entire schedule, except the wrapping which has already been subjected to reduction.

"The British agreement lists the fine papers as among those on which duty reductions may be made. The Canadian agreement lists book and other printing papers, and all tissue papers valued at not more than 15 cents per pound. Other items of lesser importance appear in the announcement of each proposed agreement.

"Briefs have just been completed by the Import Committee and filed in Washington opposing duty reductions on the items listed for consideration in the British agreement, and plans are complete for oral representations by prominent paper manufacturers when the open hearings begin on March 14.

"The brief on the Canadian agreement must be filed before March 12, and oral hearings will begin April 4.

"Inasmuch as any duty reductions accomplished through these agreements would apply, not only to the country with which the agreement is written, but with practically every other nation in the world, the Import Committee will welcome any suggestions that can be made by paper manufacturers which will assist in making our arguments against duty reductions so telling that such reductions may be prevented."



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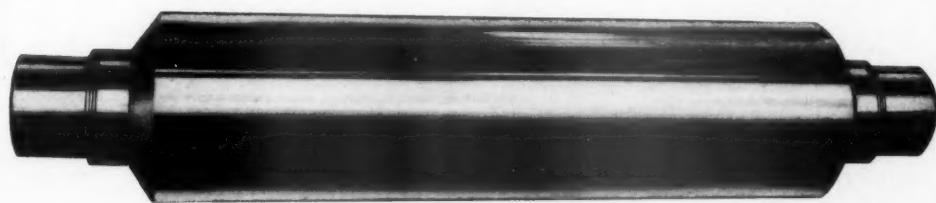


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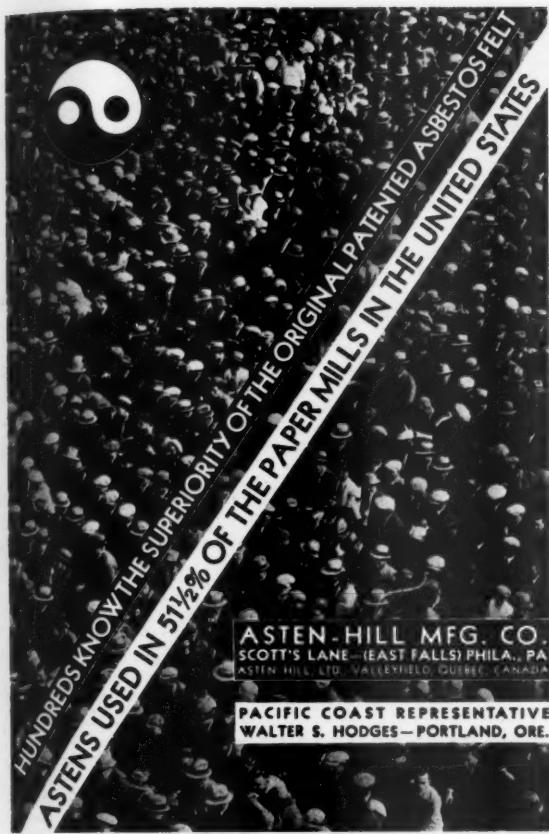
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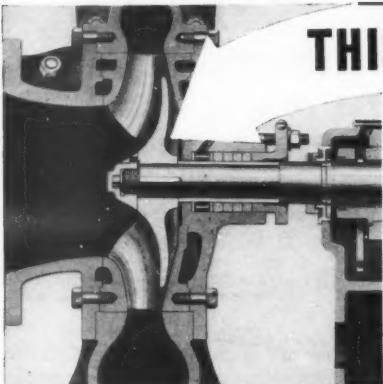
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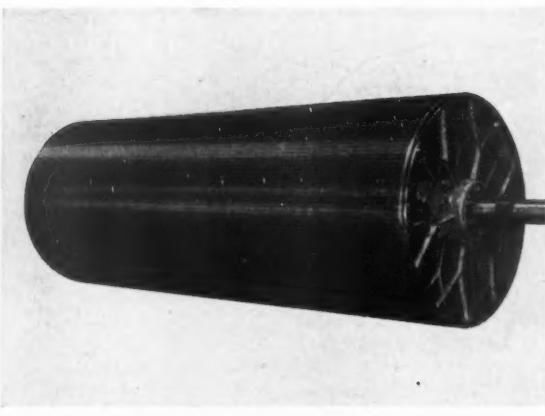
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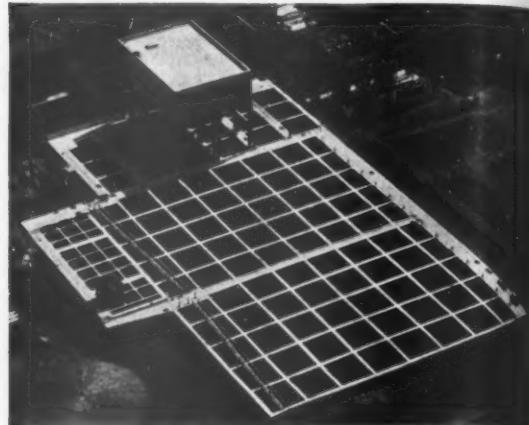


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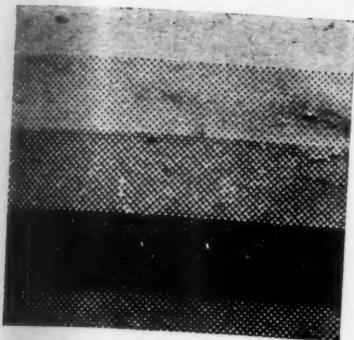
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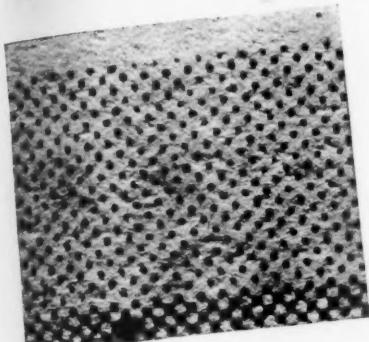
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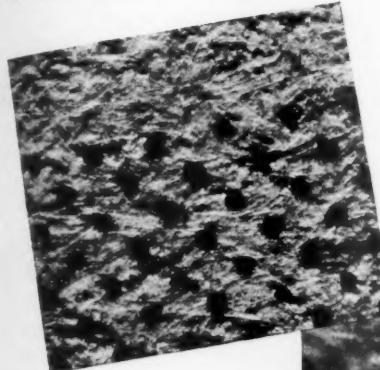
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